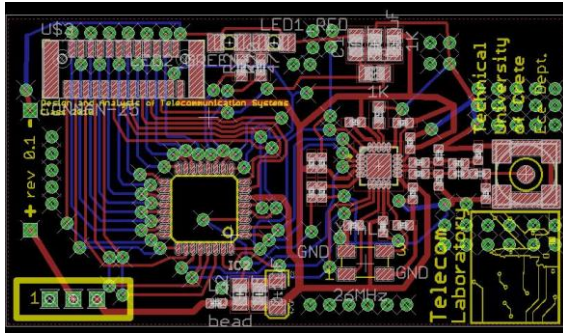




**Technical University of Crete**  
Department of  
Electronic and  
Computer Engineering

# **Annual Activity Report**

From Sep. 1, 2009 to Aug. 31, 2010  
Chania, Crete  
Dec. 31, 2010



**iCubes v0.2: Low-power and low-cost, programmable transceiver node and sensor network, designed and built at Telecom Lab, for teaching and research purposes.**



## Message from the Chair

Dear Colleague,

The Department of Electronic and Computer Engineering (ECE) at the Technical University of Crete (TUC) was founded in the late '80's, and admitted its first class of (30) undergraduate students in 1990. Since then, the Department has grown considerably, by all counts. As of this writing, the incoming class of freshmen has grown to 125, and the number of faculty to 25 (with several more to join us soon).

The Department is organized in four Divisions: Computer Engineering, Telecommunications, Electronics & Computer Architecture, and Control Systems. There is a successful research-oriented graduate studies program in place since the early 90's, which has grown considerably over the years.

The Department is proud of the accomplishments of its graduates. Many of our former students have pursued graduate studies here and abroad. Their ranks include faculty members at top-rated North-American Universities (Georgia Tech, McMaster University), researchers at University, Government, and Industry Research Labs (e.g., Rice-U.S., NICTA-Australia, Telcordia-U.S., Ericsson - Sweden), and successful professional engineers across Greece, Europe and the rest of the world.

Over half of the faculty members have obtained their Doctoral degrees in top-rated foreign Universities, and several worked for many years as faculty members abroad prior to joining us. The current levels of peer-reviewed scientific publication activity and competitive research funding are testament to the talent, visibility, and productivity of the faculty. Faculty credits further include multiple best paper awards at the IEEE Society level, professional recognition in terms of Distinguished Lecturer, Associate Editor and Technical Committee member appointments, and leadership in conference organization.

While the Department's performance is good in all these metrics, there is much room for improvement. A very useful tool towards this end is the Annual Activity Report (AAR), a process instituted in our department in 2005. This is the Department's fifth AAR, covering the period from Sep. 1, 2009 to Aug. 31, 2010. It is our hope that the AARs document the results of our research efforts, and help improve the quality of our Department. Your feedback is most welcome.

Athanasios P. Liavas  
liavas@telecom.tuc.gr

## Sep. 2009 – August 2010 Awards and Honors

(See <http://www.ece.tuc.gr/Controller?actionClass=loadFirstPage&action=loadFirstPage> for full list and recent updates)

### Paper Distinctions

Aggelos Bletsas, Andy Lippman and John N. Sahalos, “Simple, Zero-Feedback, Collaborative Beamforming for Emergency Radio”, 6th IEEE International Symposium on Wireless Communication Systems, Sept. 7-10 2009, Siena, Italy. *Selected as one of the five best papers.*

D. Evaggelinakis, N.D. Sidiropoulos, and A. Swami, “Joint Admission and Power Control Using Branch & Bound and Gradual Admissions”, in Proc. IEEE SPAWC 2010, June 20-23, Marrakech, Morocco. *Short-listed for best student paper award.*

### Honorary Awards

Nikos D. Sidiropoulos. *2010 IEEE Signal Processing Society Meritorious Service Award.* To be awarded during the 36th International Conference on Acoustics, Speech and Signal Processing (ICASSP), May 22-27 2011, Prague, Czech Republic.

Nikos D. Sidiropoulos. *Distinguished Lecturer of the IEEE Signal Processing Society* for 2008-2009.

### Keynote Addresses

Nikos D. Sidiropoulos, Plenary Speaker at *IEEE SPAWC 2010*, June 20-23, Marrakech, Morocco.

Apostolos Dollas, Keynote Speaker, *Annual IEEE Computer Society Symposium on VLSI (ISVLSI)*, Lixouri, Greece, July 5-7, 2010, delivering a lecture on “Reconfigurable Architectures for Bioinformatics Applications”.

Ioannis Papaefstathiou, Keynote Speaker, *8th IEEE Workshop on Intelligent Solutions in Embedded Systems (WISES)*, Heraklion, Greece, July 8-9, 2010, delivering a lecture on “Multicores for low-power embedded systems and high performance computing”.

Ioannis Papaefstathiou, Keynote Speaker, *IEEE International Conference on Cluster Computing (Cluster)*, Heraklion, Greece, September 20-24, 2010, delivering a lecture on “Highly Parallel Implementations of Bioinformatics Applications”.

Michail G. Lagoudakis, Keynote Speaker, *6<sup>th</sup> Hellenic Conference on Artificial Intelligence (SETN)*, Athens, Greece, May 2010, delivering a lecture on “RoboCup: A Challenge Problem for Artificial Intelligence”.

### Other Distinctions

Pavlos Malakonakis, Miltiadis Smerdis, Euripides Sotiriades, Apostolos Dollas, "An FPGA Based Sudoku Solver Based on Simulated Annealing Methods", Third place in the International Conference on Field Programmable Technology Design Competition (a Sudoku Solver up to dimension 15 running on actual XUP standardized hardware platforms), Sydney, Australia, Dec. 9-11, 2009.

## **Computer Science Division**

### **Faculty members**

- Garofalakis Minos
- Deligiannakis Antonios
- Lagoudakis Michail
- Mania Ekaterini
- Petrakis Euripides
- Samoladas Vassilios
- Christodoulakis Stavros



**Technical University of Crete**  
**Department of Electronic & Computer Engineering**

## **Annual Activity Report**

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Minos Garofalakis

**Rank:** Professor

**Years in rank:** 1 year, 8 months (since January 2, 2009)

**Full-time or part-time:** Full-time

**Division:** Computer Science

**Lab affiliation:** SoftNet – Software Technology and Network Applications  
Laboratory (Director)

### **A – Teaching**

- Undergraduate courses taught
  - PLI-401: Algorithms and Complexity
  - PLI-406: Advanced Topics in Database Systems
- Graduate courses taught
  - PLI-627: Approximate Methods for Massive Databases and Data Streams
- Curriculum & course development
  - New courses / labs developed
  - Lecture notes / slides developed
    - Updates slides for curriculum courses: PLI-401, PLI-406, PLI-627

### **B – Publications**

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    - Graham Cormode, **Minos Garofalakis**, Peter J. Haas, Christopher M. Jermaine. “Approximate Query Processing in Database Systems”, Survey Article in preparation for *Foundations and Trends in Databases*, 2009.
  - Accepted:
  - Published:

- Graham Cormode and **Minos Garofalakis**. "Histograms and Wavelets on Probabilistic Data", *IEEE Transactions on Knowledge and Data Engineering*, 22(8), August 2010 ("Best of ICDE'2009" Special Issue).
  - Reynold Cheng, Michael Chau, **Minos N. Garofalakis**, and Jeffrey Xu Yu. "Guest Editors' Introduction: Special Section on Mining Large Uncertain and Probabilistic Databases", *IEEE Transactions on Knowledge and Data Engineering*, 22(9), September 2010.
- Publications in refereed conferences
  - Submitted: those published/appeared (see below)
    - Daisy Zhe Wang, Michael J. Franklin, **Minos Garofalakis**, and Joseph M. Hellerstein. "Hybrid In-Database Information Extraction"
    - Vibhor Rastogi, Nilesch Dalvi, and **Minos Garofalakis**. "Large Scale Collective Entity Matching"
  - Accepted:
    - Evangelos E. Papalexakis, Nicholas D. Sidiropoulos, and **Minos Garofalakis**. "Reviewer Profiling Using Sparse Matrix Regression", *OEDM'2010 Workshop (in conjunction with IEEE ICDM'2010)*, Sydney, Australia, December 2010.
  - Published:
    - Daisy Zhe Wang, Michael J. Franklin, **Minos Garofalakis**, and Joseph M. Hellerstein. "Querying Probabilistic Information Extraction", *Proceedings of VLDB'2010 (PVLDB 3(1))*, Singapore, September 2010.
    - Daisy Zhe Wang, Eirinaios Michelakis, Michael J. Franklin, **Minos Garofalakis**, and Joseph M. Hellerstein. "Probabilistic Declarative Information Extraction", *Proceedings of IEEE ICDE'2010*, Long Beach, California, USA, March 2010.
- Books and edited book chapters
  - Reynold Cheng, Michael Chau, **Minos N. Garofalakis**, and Jeffrey Xu Yu (Editors). Special Issue on Mining Large Uncertain and Probabilistic Databases, *IEEE Transactions on Knowledge and Data Engineering*, September 2010.
- Patents
  - *GRANTED*
    - **Minos Garofalakis**, Jayavel Shanmugasundaram, Erik Vee, Rajagopal Baskaran, Jagadish Samantarai, Joseph Ting, and Yuan Zhuge. "Automated Document Classifier Tuning Including Training Set Adaptive to User Browsing Behavior", U.S. Patent No. 7,797,260, Issued September 14, 2010. (*Filed February 2008*)
    - Graham Cormode, **Minos Garofalakis**, S. Muthukrishnan, and Rajeev Rastogi. "Method and Apparatus for Globally Approximating Quantiles in a Distributed Monitoring Environment", U.S. Patent No. 7,783,647, Issued August 24, 2010. (*Filed November 2005*)
    - Graham Cormode and **Minos Garofalakis**. "Method for Distributed Tracking of Approximate Join Size and Related Summaries", U.S. Patent No. 7,756,805, Issued July 13, 2010. (*Filed April 2006*)
    - **Minos Garofalakis** and Amit Kumar. "Deterministic Wavelet Thresholding for General Error Metrics", U.S. Patent No. 7,693,335, Issued April 6, 2010. (*Filed June 2005*)
    - Sumit Ganguly, **Minos Garofalakis**, Rajeev Rastogi, and Krishan Sabnani. "Streaming Algorithms for Robust, Real-time Detection of DDoS Attacks", U.S.



Patent No. 7,669,241, Issued February 23, 2010. (*Filed September 2004*)

- Sumit Ganguly, **Minos Garofalakis**, Amit Kumar, and Rajeev Rastogi. "Method For Distinct Count Estimation over Joins Of Continuous Update Streams", U.S. Patent No. 7,668,856, Issued February 23, 2010. (*Filed September 2004*)
- Sumit Ganguly, **Minos Garofalakis**, and Rajeev Rastogi. "Tracking Set-Expression Cardinalities over Continuous Update Streams", U.S. Patent No. 7,596,544, Issued September 29, 2009. (*Filed December 2004*)

- *FILED*

## C – Awards & Distinctions

## D – Funded Projects

- Current projects:
  - *Fellow & Scientist in Charge* for “HeisenData: Towards a Next-Generation Uncertain-Data Management System”, FP7 Marie-Curie International Re-integration Grant (Fellow’s budget 100.000€) 2010-2014.
  - *TUC Principal Investigator* for “LIFT – Using Local Inference in Large-Scale Distributed Systems”, FP7 FET-Open Collaborative STREP Project (Total budget 2.5M€, TUC budget 482.500€), 2010-2013.
  - *Principal Investigator* for “Continuous Analysis of Distributed Data Streams”, *Basic Research Grants*, Research Office (ELKE), Technical University of Crete (PI budget 15.000€), 2010-2012.
- Project proposals submitted:
  - 2 proposals submitted to Greek national program “Cooperation” (Greek Secretariat for Research and Technology).

## E – Professional service

- Associate Editor duties
  - ACM Transactions on Database Systems (TODS): *Associate Editor* (January 2008 -- present)
  - IEEE Transactions on Knowledge and Data Engineering (TKDE): *Associate Editor* (2007 -- present)
  - Foundations and Trends in Databases: *Editorial Board Member* (2006 -- present)
  - Statistical Analysis and Data Mining (SAM): *Editorial Board Member* (February 2010 -- present)
- Conference Technical Program Committee service
  - **Conference Program Committees:** IEEE ICDE’2010, SIAM SDM’2010, ASONAM’2010, VLDB’2010, ACM CIKM’2010, EDBT’2011 (*PC Group Leader*)
  - **Workshop Program Committees:** EDBT/ICDT’2010 Ph.D. Workshop, XSym’2010, MMIS’2010.

## F – Service to the Department and the School

- Departmental responsibilities
  - *Member* of the Undergraduate Studies Committee (September 2009 – present).
- School-level responsibilities
  - *Member of the Management Board* of the Company for the Exploitation of the Estate and the Technological Park of the Technical University of Crete (www.eadip.tuc.gr, May 2009 – present).

## G – Advising

- Active graduate students supervised
- Ph.D. and M.Sc. students supervised
  - Daisy Zhe Wang (PhD student, UC-Berkeley, co-advised with J. Hellerstein and M. Franklin)
  - Kostas Athanasoglou (MSc student, TUC)
  - Vagelis Vazaios (MSc student, TUC)
- PhD. And M.Sc. degrees awarded
- Undergraduate students supervised
- Diploma theses in progress (supervisor)
  - 4 theses in progress (A. Nydriotis, G. Hristopoulos, L. Papageorgiou, G. Fragiadoulakis)
- Diploma theses completed (supervisor)
  - Kalliopi Kalantzaki. “A High-Performance, Hadoop-based Parallel Crawler”, March 2010.
  - Agis Chartsias. “Link Prediction in Large-Scale Social Networks Using Hadoop”, July 2010.



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Antonios Deligiannakis

**Rank:** Assistant Professor

**Years in rank:** 2 ½

**Full-time or part-time:** Full-time

**Division:** Computer Science

**Lab affiliation:** Software Technology and Network Applications  
Laboratory (Softnet)

### A – Teaching

- Undergraduate courses taught
  - Comp 111: Structured Programming
  - Comp 506: Data Processing and Handling in Sensor Networks
- Graduate courses taught
  - Comp 626: Data Processing and Handling in Sensor Networks
  - Comp 622: Special Issues in Database Systems
- Labs taught
  -
- Curriculum & course development
  - New courses / labs developed
  - Lecture notes / slides developed
  - Authored textbooks

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    - **Antonios Deligiannakis**, Yannis Kotidis, Vassilis Stoumpos, Alex Delis. Collection Trees for Event-Monitoring Queries. Information Systems.
    - **Antonios Deligiannakis**, Yannis Kotidis, Vassilis Stoumpos, Alex Delis. Collection Trees for Event-Monitoring Queries. Information Systems (revision).
    - **Antonios Deligiannakis** and Yannis Kotidis. Detecting Proximity Events in Sensor Networks. Information Systems (revision).
  - Accepted:

- **Antonios Deligiannakis**, Yannis Kotidis, Vassilis Stoumpos, Alex Delis. Collection Trees for Event-Monitoring Queries. Information Systems.
- Published:
  - Michaela A. Bornea, Vasilis Vassalos, Yannis Kotidis, **Antonios Deligiannakis**. “Adaptive Join Operators for Result Rate Optimization on Streaming Inputs,” *IEEE Transactions on Knowledge and Data Engineering*, 2010 (“Best of ICDE 2009” Special Issue).
- Publications in refereed conferences
  - Submitted: those published/appeared (see below)
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**, Vasilis Vassalos, Yannis Theodoridis. TACO: Tunable Approximate Computation of Outliers in wireless sensor networks. Submitted to ACM SIGMOD International Conference on Management of Data, 2010.
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**. “PAO: Power-Efficient Attribution of Outliers in Wireless Sensor Networks”. Submitted to 7th VLDB Workshop on Data Management for Sensor Networks (DMSN), Singapore, September 2010.
    - Mihaela A. Bornea, **Antonios Deligiannakis**, Yannis Kotidis, Vasilis Vassalos. Semi-Streamed Index Join for Near-Real Time Execution of ETL Transformations. Submitted to ICDE 2011.
    - Vicky Dritsou, Panos Constantopoulos, **Antonios Deligiannakis**, Yannis Kotidis. Shortcut Selection for Query Optimization in RDF Databases. Submitted to CIKM 2010.
    - Vicky Dritsou, Panos Constantopoulos, **Antonios Deligiannakis**, Yannis Kotidis. Shortcut Selection for Query Optimization in RDF Databases. Submitted to ICDE 2011.
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**, Vasilis Vassalos, Yannis Theodoridis. Approximate Computation of Outliers in Wireless Sensor Networks. HDMS 2010.
  - Accepted:
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**, Vasilis Vassalos, Yannis Theodoridis. TACO: Tunable Approximate Computation of Outliers in wireless sensor networks. ACM SIGMOD International Conference on Management of Data, 2010.
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**. “PAO: Power-Efficient Attribution of Outliers in Wireless Sensor Networks”. 7th VLDB Workshop on Data Management for Sensor Networks (DMSN), Singapore, September 2010.
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**, Vasilis Vassalos, Yannis Theodoridis. Approximate Computation of Outliers in Wireless Sensor Networks. HDMS 2010.
  - Published:
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**, Vasilis Vassalos, Yannis Theodoridis. TACO: Tunable Approximate Computation of Outliers in wireless sensor networks. In Proc. of the ACM SIGMOD International Conference on Management of Data, Indianapolis, Indiana, USA, June 2010
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**. “PAO: Power-Efficient Attribution of Outliers in Wireless Sensor Networks”. 7th VLDB Workshop on Data Management for Sensor Networks (DMSN), Singapore, September 2010.
    - Nikos Giatrakos, Yannis Kotidis, **Antonios Deligiannakis**, Vasilis Vassalos, Yannis Theodoridis. Approximate Computation of Outliers in Wireless Sensor

Networks. HDMS 2010.

- Books and edited book chapters
- Patents

## **C – Awards & Distinctions**

## **D – Funded Projects**

- Current projects:
  - Funding for Infrastructure in Wireless Sensor Networks. Technical University of Crete. Amount: 170.000 €
- Project proposals submitted:
  - Funding for Infrastructure in Wireless Sensor Networks. Technical University of Crete. Amount: 170.000 €
  - In4M: Intelligent Information Ingest and Integration Management. Proposed NOE in FP7-ICT-2009-5 (reached interviews – no funding).
  - Catalysing Excellence in Digital Curation and Preservation. Proposed NOE in ICT-2009.4.1: Digital Libraries and Digital Preservation
  - 3 Thales proposals.

## **E – Professional service**

- Associate Editor duties
  -
- Society Technical Committee duties
  -
- Conference Technical Program Committee service
  - ACM Conference on Information and Knowledge Management (CIKM 2010)
  - IEEE International Conference on Computational Science and Engineering (CSE 2010)
  - East-European Conference on Advances in Databases and Information Systems (ADBIS 2010)
  - ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE 2010)
  - International Workshop on Sensor Networks Technologies for Information Explosion Era (SeNTIE 2010)
  - Hellenic Data Management Symposium (HDMS 2010)
- Conference Organization (specify role)
  - Publicity Chair at ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE 2010)
- Reviewing activities
  - ACM Transactions on Database Systems (TODS)
  - IEEE Transactions on Knowledge and Data Engineering (TKDE)
  - Parallel and Distributed Databases

## **F – Service to the Department and the School**

- Departmental responsibilities

- Consultant in undergraduate studies (2<sup>nd</sup> semester courses, Spring 2010)
- School-level responsibilities
  -

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Stelios Mammias
    - Yannis Flouris
    - Konstantinos Tsakonas
  - PhD. And M.Sc. degrees awarded
    -
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Sofia Georgiakaki
    - Dionisios Kalogiropoulos
    - Makis Mpousgos
    - Eytyxios Babourakis
    - Smalis Sklavos
    - Aleka Seliniotaki
    - Yannis Papadakis
    - Manos Vogiatzis
    - Yannis Xarxaros
    - Sabbas Bourdakias
  - Diploma theses completed (supervisor)
    - Agis Chartsias (co-advisor, with Minos Garofalakis)
    - Xrysobalantis Kanellopoulos



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Michail G. Lagoudakis

**Rank:** Assistant Professor

**Years in rank:** 5

**Full-time or part-time:** Full-time

**Division:** Computer Science

**Lab affiliation:** Intelligent Systems Laboratory

### A – Teaching

- Undergraduate courses taught
  - COMP 503 – Autonomous Agents (Fall 2009)
  - COMP 411 – Theory of Computation (Spring 2010)
  - COMP 417 – Artificial Intelligence (Spring 2010)
- Graduate courses taught
  - COMP 625 – Autonomous Agents (Fall 2009)
- Labs taught
  - COMP 503 – Autonomous Agents Laboratory (Fall 2009)
- Curriculum & course development
  - New courses / labs developed
    - Updated laboratory exercises for Autonomous Agents (undergrad)
  - Lecture notes / slides developed
    - Updated lecture slides for Theory of Computation
    - Updated lecture slides for Artificial Intelligence
    - Updated lecture slides for Autonomous Agents (undergraduate)
    - Updated lecture slides for Autonomous Agents (graduate)

### B – Publications

- Publications in refereed journals
  - Accepted:
    - Vasileios Vasilikos and **Michail G. Lagoudakis**, “Optimization of Heuristic Search using Recursive Algorithm Selection and Reinforcement Learning”, *Annals of Mathematics and Artificial Intelligence*, 2010, to appear.
    - Diomidis Katzourakis, Yannis Papaefstathiou, and **Michail G. Lagoudakis**, “Open-Source Scaled Automobile Platform for Fault-Tolerant Electronic Stability Control”, *IEEE Transactions on Instrumentation and Measurement*, 2010, to appear.

- Published:
  - Ali Ekici, Ozlem Ergun, Pinar Keskinocak, and **Michail G. Lagoudakis**, “Optimal Job Splitting on a Multi-Slot Machine with Applications in the Printing Industry”, *Naval Research Logistics*, 57 (3), 2010, pp. 237–251.
- Publications in refereed conferences
  - Published:
    - Maria Rovatsou and **Michail G. Lagoudakis**, “Minimax Search and Reinforcement Learning for Adversarial Tetris,” *Proceedings of the 6<sup>th</sup> Hellenic Conference on Artificial Intelligence (SETN)*, Athens, Greece, May 2010, pp. 417–422.
    - Stavros Korokithakis and **Michail G. Lagoudakis**, “Heuristic Rule Induction for Decision Making in Near-Deterministic Domains,” *Proceedings of the 6<sup>th</sup> Hellenic Conference on Artificial Intelligence (SETN)*, Athens, Greece, May 2010, pp. 339–344.
    - Emmanuel Rachelson and **Michail G. Lagoudakis**, “On the Locality of Action Domination in Sequential Decision Making,” *Proceedings of the 11<sup>th</sup> International Symposium on Artificial Intelligence and Mathematics*, Ft. Lauderdale, FL, USA, Jan 2010.
- Books and edited book chapters
  - Accepted:
    - **Michail G. Lagoudakis**, “Value Function Approximation” in Claude Sammut and Geoffrey I. Webb (Eds.), *Encyclopedia of Machine Learning*, Springer, 2010, to appear.
    - **Michail G. Lagoudakis**, “Least-Squares Reinforcement Learning Methods” in Claude Sammut and Geoffrey I. Webb (Eds.), *Encyclopedia of Machine Learning*, Springer, 2010, to appear.

## C – Awards & Distinctions

## D – Funded Projects

- Current projects:
  - “CALR: Coordinated Action and Learning in RoboCup”, *Basic Research Grants*, Research Office (ELKE), Technical University of Crete, January 2009 – December 2010, Contract: TUC-242, PI: M. G. Lagoudakis, Total/PI’s Budget: 12,000€/12,000€.
- Project proposals submitted:
  - “Auto-CSOP-Solver: Design, Development and Deployment of an Autonomous Self-Training Agent for CSOPs”, Thales – Support of the Interdisciplinary and/or Inter-Institutional Research and Innovation, National Strategic Reference Network (NSRF) Programme.
  - “TABS: Tackling Arthritis using a Biomechanical and Systems Biology approach”, Thales – Support of the Interdisciplinary and/or Inter-Institutional Research and Innovation, National Strategic Reference Network (NSRF) Programme.
  - “IHRIS: Integrated Health Research Information System”, Thales – Support of the Interdisciplinary and/or Inter-Institutional Research and Innovation, National Strategic Reference Network (NSRF) Programme.
  - “NOPTILUS: autonomous, self-learning, optimal, and complete underwater systems”, Integrated Project, Information and Communication Technologies (ICT),



## E – Professional service

- Associate Editor duties
  - *Editorial Board*, Journal of Intelligent Learning Systems and Applications
- Society Technical Committee duties
  - *Standard Platform League Executive Committee*, RoboCup Federation
  - *Technical Committee on Robot Learning*, IEEE Robotics and Automation Society
- Conference Technical Program Committee service
  - *Conference on Learning and Intelligent Optimization 2010 (LION)*
  - *26<sup>th</sup> International Conference on Machine Learning (ICML 2010)*
  - *24<sup>th</sup> AAAI Conference on Artificial Intelligence (AAAI 2010)*
  - *6<sup>th</sup> Hellenic Conference on Artificial Intelligence (SETN 2010)*
  - *AAMAS Workshop on Multi-agent Sequential Decision Making 2010*
  - *14<sup>th</sup> International RoboCup Symposium 2010*
  - *3<sup>rd</sup> International Conference on Agents and Artificial Intelligence 2011*
  - *10<sup>th</sup> Intl Joint Conf on Autonomous Agents and Multiagent Systems 2011*
- Conference Organization (specify role)
  -
- Reviewing activities
  - *Journal of Machine Learning*
  - *NeuroComputing Journal*
  - *Journal of Robotics and Autonomous Systems*
  - *IEEE Transactions on Robotics*
  - *Conference on Learning and Intelligent Optimization 2010 (LION)*
  - *26<sup>th</sup> International Conference on Machine Learning (ICML 2010)*
  - *24<sup>th</sup> AAAI Conference on Artificial Intelligence (AAAI 2010)*
  - *6<sup>th</sup> Hellenic Conference on Artificial Intelligence (SETN 2010)*
  - *AAMAS Workshop on Multi-agent Sequential Decision Making 2010*
  - *14<sup>th</sup> International RoboCup Symposium 2010*
  - *IEEE International Conference on Robotics and Automation 2010 (ICRA)*
  - *IEEE/RSJ Intl Conference on Intelligent Robots and Systems 2009 (IROS)*
  - *49<sup>th</sup> IEEE Conference on Decision and Control 2010 (CDC)*

## F – Service to the Department and the School

- Departmental responsibilities
  - *Departmental Representative*, TUC Library Committee
  - *Editor*, Undergraduate Program Guide (Greek and English)
- School-level responsibilities
  - *Editorial Board*, “TUC News” publication

## G – Advising

- Postdoctoral Fellows (supervisor)
  - Emmanuel Rachelson, “Efficient Rollout Methods for Reinforcement Learning”, January 2009 – December 2010.
- Graduate students
  - Ph.D. and M.Sc. theses in progress (supervisor)

- Rexakis Ioannis (Ph.D program), “Reinforcement Learning via Supervised Learning”, Enrollment: 2006
- Markos Mpervanakis (M.Sc. program), “Experimental Evaluation of Auction-Based Coordination”, Enrollment: 2006
- Jason Pazis (M.Sc. program), “Efficient Learning Methods for High-Dimensional State-Action Spaces”, Enrollment: 2008
- Eleftherios Chatzilaris (M.Sc. program), “Coordinated Action and Learning in RoboCup ”, Enrollment: 2009
- Ioannis Skoulakis (M.Sc. program), “Efficient Reinforcement Learning in Alternating Games ”, Enrollment: 2010
- Ph.D and M.Sc. theses completed (committee member)
  - Alexandros Zotos, “A Real-Time Selective Rendering Algorithm based on Spatial Cognition”
  - Pavlos Papadopoulos, “Identification of Linear Systems in Canonical Form with the Expectation Maximization Algorithm”
- Ph.D and M.Sc. theses in progress (committee member)
  - Alejandro Mosteo (Ph.D. program), “Multi-Robot Task Allocation in Service Robotics: From Unlimited to Limited Communication Range”, Department of Computer Science and Systems Engineering, University of Zaragoza, Spain. Visiting student at TUC (April 2007 – July 2007).
- Undergraduate students
- Diploma theses completed (supervisor)
  - Evangelos Vazaios, “Narukom: A Distributed, Cross-Platform, Transparent Communication Framework for Robotic Teams”
  - Ioannis Skoulakis, “Systematic Search and Reinforcement Learning for the Board Game Neighbours”
  - Vlassis Dimitriades, “Reinforcement Learning in Real Time Strategy Games: Case Study on the Free Software Game Glest”
  - Nikolaos Papoulias, “High-Level Debugging: Facilities and Interfaces – Design and Development of a Debug-Oriented IDE”
  - Eleftherios Chatzilaris, “Visual-Feature-based Self-Localization for Robotic Soccer”
  - Andreas Panakos, “Efficient Color Recognition Under Varying Illumination Conditions For Robotic Soccer”
  - Ioannis Marakis, “Conversion, Unification, and Visualization of Meta-Information for Gene Regulatory Networks”
  - Maria Rovatsou, “Minimax Search and Reinforcement Learning for Adversarial Tetris”
- Diploma theses in progress (supervisor)
  - Alexandros Paraschos, “Monas: A Flexible Software Architecture for Robotic Agents”
  - Dimitrios Katsaitis, “Estimation of 3D Camera Ego-Motion from Sequences of Images”
  - Stylianos Tsigdinos, “Learning to Play Backgammon using Reinforcement Learning”
  - Emmanuel-Theofanis Chourdakis, “Rule Learning for Automated Music Composition through Inductive Logic Programming”
  - Emmanuel Orfanoudakis, “Informed Object Recognition for the RoboCup Standard Platform League”
  - Iris Kyranou, “Sonar-based Obstacle Avoidance for Nao Robots”
- Diploma theses completed (committee member)
  - Meletios Stathis, “Development of a Physics-Based 3D Game”
  - Nikolaos Zervoudakis, “3D Game Development using a Rendering Engine”

- Agis Chartsias, “Link Prediction in Large Scale Social Networks using Hadoop”
  - Konstantinos Makris, “SPARQL Rewriting for Query Mediation over Mapped Ontologies”
  - Antonia Georgaraki, “OWL/SPARQL-based Mediator for Integration of OWL/RDF Information Sources”
  - Stylianos Kokkalis, “Design and Architecture with Reconfigurable Logic of Data Structures for the Game of Go”
  - Walid Soulakis (DPEM), “Reinforcement Learning for Robotic Walk”
  - Student team projects
- Founder and co-leader of the robotic soccer team Kouretes ([www.kouretes.gr](http://www.kouretes.gr)), the first and only Greek team participating in the RoboCup competition. Kouretes 2010 consisted of one graduate and five undergraduate ECE students working on their M.Sc./diploma theses.



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Katerina Mania

**Rank:** Assistant Professor

**Years in rank:** 4 years, 9 months

**Full-time or part-time:** Full-time

**Division:** Computer Science

**Lab affiliation:** Distributed Multimedia Information Systems and Applications (MUSIC)

### A – Teaching

On maternity leave.

### B – Publications

- Publications in refereed journals
  - Submitted
    - Mourkoussis, N., Rivera, F., Troscianko, T., Dixon, T., Hawkes, R., **Mania, K.** (final revision 2010). “Slant Perception based on Gait in Real and Virtual Environments,” submitted to *Human Computer Studies*, Elsevier.
  - Accepted
    - Mourkoussis, N., Rivera, F., Troscianko, T., Hawkes, R., Watten, P., **Mania, K.** (to appear 2010). “Quantifying Fidelity for Virtual Environment Simulations Employing Memory Schema Assumptions,” *ACM Transactions on Applied Perception*, ACM Press.
  - Published
    - **Mania, K.**, Badariah, H., Coxon, M. (2010). Cognitive Transfer of Training from Immersive Virtual Environments to Reality. *ACM Transactions on Applied Perception*, 7(2), 9:1-9:14, ACM Press.
    - Sylaiou, S., Mania, K., Karoulis, A., White, M. (2010). “Exploring the Relationship between Presence and Enjoyment in a Virtual Museum,” *Human Computer Studies*, 68(5), 243-253, Elsevier.
- Publications in refereed conferences

- Published
  - Sifniotis, M., Jackson, B., **Mania, K.**, Watten, P.L., White, M. (2010). “3D Visualization of Archaeological Uncertainty,” Poster, *ACM Siggraph Symposium on Applied Perception in Graphics and Visualization 2010*, 162-162, Los Angeles, USA.
  - Bennett, A., Coxon, M., **Mania, K.** (2010). “The Effect of Stereo and Context on Memory and Awareness States in Immersive Virtual Environments,” *ACM Siggraph Symposium on Applied Perception in Graphics and Visualization 2010*, 135-140, Los Angeles, USA.
  - Banks, M., Healey, C., **Mania, K.**, McNamara, A. (2010). “Perceptually-Motivated Graphics, Visualization and 3D Displays” Course, *ACM Siggraph 2010*, Los Angeles, USA.
  - Rivera, F., Watten, P., Holroyd, P., Beacher, F., **Mania, K.**, Critchley, H. (2010). “Real-time Compositing Framework for Stereo fMRI Displays,” Poster, *ACM Siggraph 2010*, Los Angeles, USA.
  - Zotos, A., **Mania, K.**, Mourkoussis, N. (2009). “A Schema-based Selective Rendering Framework,” *ACM Siggraph Symposium on Applied Perception in Graphics and Visualization 2009*, Oct. 2009, 85-92, Chania, Crete, Greece.
  - Papadakis, G., **Mania, K.** (2009). “The Cognitive Impact of Head-Tracking Latency,” Poster, *ACM Siggraph Symposium on Applied Perception in Graphics and Visualization 2009*, 136-136, Oct. 2009, Chania, Crete, Greece.

## C – Awards & Distinctions

## D – Funded Projects

- Current projects (at the Technical University of Crete, Greece):
  - Internal TUC major equipment award: Immersive eye tracking system
  - Internal TUC project awarded (basic research call): *Perceptual* and *cognitive* impact of tracking latency in ecologically valid immersive synthetic simulations with applicability to remote virtual design and tele-operation towards efficient man-machine interaction
- Projects awarded:
  - HRAKLEITOS, ‘Selective Rendering Algorithms based on Human Perception (Memory Schemas), PhD candidate Alexandros Zotos. Collaborators: INRIA Sophia Antipolis and Max-Planck Institute for Biological Cybernetics.
- Project proposals submitted:
  - THALIS call, CYTA call, ICT EU FP7 ‘Socially Adaptable Believable Intelligent Robots’, ARXIMIDIS call

## E – Professional service

- Associate Editor duties
  - Associate Editor, *Presence Tele-operators and Virtual Environments*, MIT Press (since June 2006).
  - Associate Editor, *ACM Transactions on Applied Perception*, ACM Press (since September 2007).
- Editorial board
  - International journal of Interactive Worlds, IBIMA Publishing (since spring 2010).
- Conference Technical Program Committee service - membership
  - Eurographics Symposium on Rendering 2011 (EGSR), Prague, June 2011
  - Computational Aesthetics 2011, sponsored by Eurographics, Canada, Aug. 2011
  - Computational Aesthetics 2010, sponsored by Eurographics, London, June 2010
  - 3rd IEEE International Conference in Games and Virtual Worlds for Serious Applications, Greece, May 2011
  - IEEE International Conference on Multimedia and Expo, ICME 2011, workshop on Human Factors in Multimedia, Barcelona, July 2011
  - 2nd IEEE International Conference in Games and Virtual Worlds for Serious Applications, Portugal, March 2010
  - ACM Siggraph Symposium on Applied Perception in Graphics and Visualisation (APGV) 2009, Crete, Greece, Oct. 2009.
  - ACM Siggraph Symposium on Applied Perception in Graphics and Visualisation (APGV) 2010, Los Angeles, USA, July 2010.
  - 10th Annual International Workshop on Presence 2009, Los Angeles USA, Nov. 2009
  - 13<sup>th</sup> International conference on Virtual Systems and Multimedia (VSMM) 2009, Austria, Sept.2009
  - IADIS Computer Graphics and Visualization 2010
  - IADIS Web Virtual Reality and 3D Worlds 2010 (Web3DW 2010)
  - SFHMMY 2010, 4<sup>th</sup> student conference of Electrical and Computer Engineers
- Conference - Program Organization (specify role)
- Program co-chair, ACM Siggraph Symposium on Applied Perception in Graphics and Visualization 2010 (APGV 2010), co-located with ACM SIGGRAPH 2010, July 2010, Los Angeles, USA
  - Conference co-chair, ACM Siggraph Symposium on Applied Perception in Graphics and Visualisation (APGV) 2009, Sept.-Oct. 2009, Chania, Crete, Greece
- Reviewing activities
  - *Reviewer for Presence, Tele-operators and Virtual Environments, IEEE Transactions on Visualisation and Computer Graphics, IEEE Multimedia, International journal of Human Computer Studies, ACM Transactions on Applied Perception, ACM Siggraph ASIA 2010, etc..*

## **F – Service to the Department and the School**

On maternity leave.

## **G – Advising**

- Active graduate students supervised
  - Graduate students completed (at the Technical University of Crete)
    - Aleksandros Zotos (M.Sc. candidate, year of enrollment Dec. 2007, completed October 2009)
  - Graduate students supervised (at the Technical University of Crete)
    - Aleksandros Zotos (Ph.D candidate, accepted for admission to PhD program, April 2009)
    - Giwrgos Papadakis (M.Sc. candidate, year of enrollment Dec. 2007)
    - Giannis Christodoulou (M.Sc. candidate, year of enrollment Sept. 2008)
    - Nick Zervoudakis (M.Sc. candidate, year of enrollment March 2010)
  - Ph.D. students supervised (at the University of Sussex)
    - Fiona Rivera (Ph.D): Year of initial enrollment in Ph.D. program: 2005, finishing write-up.
    - Maria Sifniotis (Ph.D): Year of initial enrollment in Ph.D program: 2003, finishing write-up.
- Undergraduate students supervised (completed)
  - Meletis Stathis (defended February 2010): ‘Physics-based 3D Computer Gaming’.
  - Nick Zervoudakis (defended February 2010): ‘3D Computer Gaming using a Rendering Engine’.
  - Kostas Kaggelidis (defended September 2010): ‘Networked Application for 2D and 3D Architectural Design based on SVG, X3D and AJAX Technologies’.
  - Nikolaos Fraggos (defended October 2010): ‘Open plan 3D game populated by opponents’.
  - Grigoris Nikiforakis ‘Development of a 3D Networked Game’ (defended November 2010)
- Undergraduate students supervised (to be completed)
  - Isidoros Tsouris ‘3D Computer Gaming using a Game Engine’
  - Kwstis Malkogiannis ‘3D Game Development with Optimized Opponent Routes’

In many undergraduate 3-member project committees and some M.Sc. examination committees.



## **Annual Activity Report**

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Euripides G.M. Petrakis

**Rank:** Assoc. Professor

**Years in rank:** 6.5

**Full-time or part-time:** full-time

**Division:** Computer Science

**Lab affiliation:** Intelligent Systems Laboratory  
(url:www.intelligence.tuc.gr)

### **A – Teaching**

- Undergraduate courses taught
  - Data Structures and File Structures
  - Multimedia data management
  - Computer Vision
- Graduate courses taught
  - Special topics on Information Systems
  - Computer Vision
- Labs taught
  - Data Structures and Files Structures
  - Multimedia Data Management
- Curriculum & course development
  - New courses / labs developed
    -
  - Lecture notes / slides developed
    - Data Structures and File Structures (revised)
    - Multimedia data management (revised)
  - Authored textbooks
    -

### **B – Publications**

- Publications in refereed journals
  - Submitted: those published/appeared (see below)



- Sotirios Batsakis, **Euripides G.M. Petrakis**, Evdoxios Baratis, “TOQL: Temporal Ontology Querying Language”, *IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE)*, 2010.
  - Accepted:
    - Euthymios Drymonas, Kalliope Zervanou, **Euripides G.M. Petrakis**, "Exploiting Multi-Word Term Similarity for Retrieval in Medical Document Collections: the TSRM Approach", *Journal of Digital Information Management (JDIM)*, 2010.
  - Published:
    - Nikos Hourdakakis, Michalis Argyriou, **Euripides G.M. Petrakis**, Evangelos Milios, "Hierarchical Clustering in Medical Document Collections: the BIC-Means Method", *Journal of Digital Information Management (JDIM)*, Vol. 8, No. 2, pp. 71-77, April. 2010.
    - Paraskevi Raftopoulou, **Euripides G.M. Petrakis**, Christos Tryfonopoulos, “Rewiring Strategies for Semantic Overlay Networks”, *Distributed and Parallel Databases (DAPD)*, Vol. 26, No. 2-3, pp. 181-205, December 2009.
    - Sotirios Batsakis, **Euripides G.M. Petrakis**, Evangelos Milios, “Design and Evaluation of Focused Web Crawlers”, *Data & Knowledge Engineering (DKE) Journal*, Vol. 68, No. 10, October 2009, pp. 1001-1013, 2009.
- Publications in refereed conferences
  - Submitted: those published/appeared (see below)
    - Sotiris Batsakis, **Euripides G.M. Petrakis**, "Representing and Reasoning over Spatio-Temporal Information in OWL 2.0", *6<sup>th</sup> Semantic Web Applications and Perspectives (SWAP' 2010)*, September 21-22, Bressanone, Italy.
  - Accepted:
    - Sotiris Batsakis, **Euripides G.M. Petrakis**, "Representing Temporal Knowledge in the Semantic Web: the Extended 4d-fluents Approach", *2<sup>nd</sup> International Workshop on Combinations of Intelligent Methods and Applications (CIMA' 2010)*, October 27-29, 2010, Arras, France.
    - Paraskevi Raftopoulou, **Euripides G.M. Petrakis**, "Peer Rewiring in Semantic Overlay Networks under Churn", *18<sup>th</sup> International Conference on Cooperative Information Systems (CoopIS' 2010)*, Heraklion, Crete, Greece, October 27-29, 2010.
  - Published:
    - Sotiris Batsakis, **Euripides G.M. Petrakis**, "SOWL:Spatio-temporal Representation, Reasoning and Querying over the Semantic Web", *6<sup>th</sup> International Conference on Semantic Systems (I-SEMANTICS' 2010)*, Graz, Austria, September 1-3, 2010.
    - Sotiris Batsakis, **Euripides G.M. Petrakis**, “SOWL: Representing Spatio-Temporal Information in OWL”, *7<sup>th</sup> Extended Semantic Web Conference (ESWC'2010)*, Heracklion, Crete, June 20-23, 2010 (poster).
    - Euthymis Drymonas, Kalliope Zervanou, **Euripides G.M. Petrakis**, "Unsupervised Ontology Acquisition from Plain Texts: the OntoGain System", *14<sup>th</sup> Intern. Conference Applications of Natural Language to Information Systems (NLDB'2010)*, Cardiff, UK, June 23-25, 2010, Springer, LNCS 6117, pp. 277-287.
    - Pyrros Koletsis, **Euripides G.M. Petrakis**, "SIA: Semantic Image Annotation using Ontologies and Image Content Analysis", *International Conference on Image Analysis and Recognition (ICIAR' 2010)*, Povo

de Varzim, Portugal, June 21-23, 2010, Springer LNCS 6111, part I, pp. 373-384.

■

- Books and edited book chapters
  - S.Batsakis, **E.G.M. Petrakis**, “Integrated Ontologies for Spatial Scene Descriptions”, Qualitative Spatio-Temporal Representation and Reasoning: Trends and Future Directions, IGI Global (book chapter), S. M Hazarika (Eds), 2010.
- Patents

## C – Awards & Distinctions

## D – Funded Projects

- Current projects:
  - **“SOWL: Spatio-Temporal OWL for Reasoning and Querying over the Semantic Web”** (2009-2011), Budget 15.000, Basic Research Funding from the Special Research Committee of TUC.
  - **RT3S: “Real Time Simulation for Safer Vascular Stenting” (2010-2013)**, Funding Agency: FP7-STREP, Budget 4.980.000 euros, Budget for TUC 490.000 euros.
  - **“POTrain: Positive Thinking Training”**, Funding Agency: FP7-COMENIUS Lifelong Learning, Budget: 185.000 euros, Budget for TUC: 35.000 euros,
  -
- Project proposals submitted:
  - several (over 10) new project proposals have also been submitted in EU-FP7 (calls 1 - 6)

## E – Professional service

- Conference Technical Program Committee service
  - Program committee member, “International Symposium on Visual Computing (ISVC2010)” Nov. 29 – Dec 1, 2010, Lake Tahoe, Nevada, USA (<http://www.isvc.net/>)
  - Program committee member, and Session Chair, “International Conference on Image Analysis and Recognition (ICIAR2010)” June 21-23, 2010, Povia de Varzim, Portugal, (<http://www.iciar.uwaterloo.ca/iciar10/>)
- Conference Organization (specify role)
  - Session Chair, “International Conference on Image Analysis and Recognition (ICIAR2010)” June 21-23, 2010, Povia de Varzim, Portugal, (<http://www.iciar.uwaterloo.ca/iciar10/>)
- Reviewing activities
  - Reviewer for IEEE Trans. on Knowledge and Data Engineering (IEEE TKDE), IEET Trans. On Pattern Analysis and Machine Intelligence (IEEE PAMI), ACM Trans. On Information Systems (ACM TOIS), Image and Vision Computing and

in many Conferences in the areas of Multimedia and Information Systems, Computer Vision.

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Laboratory Director, Intelligent Systems Laboratory, Department of Electronic and Computer engineering, Technical University of Crete.

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Sotiris Batsakis, Representing and Querying Spatio-temporal Information in the Semantic Web, PhD candidate (expected graduation date Dec 2011)
    - Angelos Hliaoutakis, Medical Information Systems, PhD Candidate.
    - Efthimios Drymonas, Ontology Construction from Text, PhD Candidate.
    - Evi Mavrogiannaki, Ontologies in medicine, MSc Student (expected graduation date May 2011)
    - Kostas Strvoskoufos, Spatio-Temporal Ontology Languages, MSc Student (expected graduation date Feb 2011)
  - PhD. And M.Sc. degrees awarded
    - Kalliope Zervanou, Post.Doct (PhD Univ. of Manchester, UK), Natural Language Processing, Text processing, Information Extraction.
    - Paraskevi Raftopoulou, Rewiring Peer Connections of Semantic Overlay Networks .
    - Angelos Hliaoutakis, Medical Information Systems
    - Efthimios Drymonas, Ontology Construction from Text.
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Nikos Sepetas, “Cardinality Constraint Satisfaction in OWL 2.0 Spatio-Temporal Ontologies”.
    - Polyxeni Makri, “Handling Spatio-Temporal Ontologies in PROTEGE”.
    - Antonis Dimas, “Image Annotation using Ontologies”
    - Alexandros Preventis, “Representing N-Ary Relationships in OWL2.0”.
    - George Christodoulou, “Reasoning over Spatio-Temporal Information in PELLET”.
    - George Hatzigeorgakidis, “Handling Spatio-Temporal Information in Semantic Web Applications”
  - Diploma theses completed (supervisor)
    - Pyrros Koletsis, Image Annotation using Ontologies and Image Analysis.



## **Annual Activity Report**

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Vasilis Samoladas

**Rank:** Assistant Professor

**Years in rank:** 6

**Full-time or part-time:** full-time

**Division:** Informatics

**Lab affiliation:** Software technology and network applications

### **A – Teaching**

- Undergraduate courses taught
  - Operating Systems
  - Principles of Distributed Systems
  - Multi-dimensional Data Processing
- Graduate courses taught
  - Principles of Distributed Systems
  - Multi-dimensional Data Processing
- Labs taught
  - Operating Systems
  - Principles of Distributed Systems
  - Multi-dimensional Data Processing
- Curriculum & course development
  - New labs developed for:
    - Operating Systems
    - Distributed Systems

### **B – Publications**

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    -
  - Accepted:
- Publications in refereed conferences
  - Submitted: those published/appeared (see below)
    - G. Tsatsanifos, V. Samoladas, Efficient Load-Balancing for Peer-to-Peer



## G – Advising

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - George Hatzisymeon (PhD), 4<sup>th</sup> year
    - Christos Smaragdakis (MSc)
    - Mihalis Argyrioy (MSc)
    - Katerina Asimogloy (MSc)
  - PhD. And M.Sc. degrees awarded
    - Stergios Charalambakis (MSc), 3<sup>rd</sup> year
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Vourlakis Nikolaos
  - Diploma theses completed (supervisor)
    - Asimogloy Katerina
    - Vlahou Georgia
    - Katakis Kostas



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Stavros Christodoulakis  
**Rank:** Professor  
**Years in rank:** 21  
**Full-time or part-time:** Full-time  
**Division:** Informatics  
**Lab affiliation:** MUSIC Laboratory

### A – Teaching

- Undergraduate courses taught
  - Data Bases
  - Web Applications
  - Human Computer Interaction
- Graduate courses taught
  - Web Applications
  - Human Computer Interaction

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    -
  - Accepted:
    -
  - Published:
    - **Christodoulakis, S.**, Foukarakis, M., Ragia, L., Uchiyama, H., Imai, T.: Mobile Picture Capturing for Semantic Pictorial Database Context Access, Browsing and Interaction., IEEE Multimedia, 2010.
- Publications in refereed conferences
  - Submitted: those published/appeared (see below)
    -
  - Accepted:
    -
  - Published:
    - Makris, Gioldasis, Bikakis, **Christodoulakis**: “Ontology Mapping and

SPARQL Rewriting for Querying Federated RDF resources,” *Proc. ODBASE 2010*.

- Stavrakantonakis, Tsinaraki, Bikakis, Gioldasis, **Christodoulakis**: “Sparql2Xquery 2.0 Supporting Semantics Based Queries over XML Data,” *Proceedings SMAP 2010*.
- Books and edited book chapters
  - Tsinaraki and **Christodoulakis**: “Domain Knowledge Representation in Semantic MPEG-7 Descriptions,” in *The Handbook of MPEG applications*, John Wiley and Sons.
- Patents

## C – Awards & Distinctions

## D – Funded Projects

- Current projects:
  - pSkills: Programming Skills Development in Secondary Education by means of Modern Educational Programming Languages, EU.
  - Organic.MedNet: Developing the Skills of Organic Agriculture Trainers for the Mediterranean, EU.
  - NaturalEurope: Natural History & Environmental Cultural Heritage in European Digital Libraries for Education, EU.
- Project proposals submitted:

## E – Professional service

- Conference Steering Board:
  - ECDL,
- Conference Technical Program Committee service:
  - ECDL, several others
- Conference Organization (specify role):

## F – Service to the Department and the School

- Departmental responsibilities
  - Director of the MUSIC Lab, Director of the Software Engineering lab.
  - School-level responsibilities
  - Member of the Scientific Board, Telecommunication Systems Institute, Technical University of Crete.
  - Member Department of Architecture Governing Committee, Technical University of Crete



## G – Advising

- Active graduate students supervised
- Ph.D. and M.Sc. students supervised
  - Yannis Kotopoulos(MSc)
  - Xenia Arapi (MSc)
  - Andreas Pitsiladis (MSc)
  - Manolis Mylonakis (MSc)
  - Marios Christoulakis (MSc)
  - Giorgos Stylianakis (MSc)
  - Kostas Makris (MSc)
- MSc. degree awarded
  - Giorgos Kotopoulos (MSc)
- Undergraduate students supervised
- Diploma theses in progress (supervisor)
  - Papachristoudis
  - Skevakis
  - Stavrakantonakis
  - Kalokyri
  - Mathioudakis
  - Kyfonidis
- Diploma theses completed (supervisor)
  - Panteli
  - Makris
  - Georgakaki

## **Systems Division**

### **Faculty members**

- Christodoulou Manolis
- Stavroulakis Petros



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Peter Stavroulakis

**Rank:** Professor

**Years in rank:** 20

**Full-time or part-time:** Full-time

**Division:** Systems

**Lab affiliation:** Automation

### A – Teaching

#### **Προπτυχιακά**

Theory and Applications of Automatic Control  
Optimal Control

#### **Μεταπτυχιακά**

Neural Networks

### B – Publications

- Books published  
“Handbook in Communication and information security,” published by Springer.

### C – Awards & Distinctions

### D – Funded Projects

### E – Professional service

- Guest Editor for a special issue of the International Journal of Multimedia Information security.
- **Associate Editor duties**
  - International Journal on Communication and information Security, published by John Wiley
  - China Communications Journal
  - International Satellite Systems and Networking

- Society Technical Committee duties
  - Founding Member of the IEEE Technical Committee on communication and information Security
- Reviewing activities
  - Reviewer of IEEE
  - Electronic Letters
  - International Journal of Communication Systems
  - Communications Journal IET
  - China Communications Journal

## **F – Service to the Department and the School**

## **G – Advising**

## Electronics and Computer Architecture Division

### Faculty members

- Balas Costas, Associate Professor
- Bucher Matthias, Assistant Professor
- Dollas Apostolos, Professor
- Kalaitzakis Kostas, Professor
- Koutroulis *Eftichios*, Adjunct Lecturer
- Papaefstathiou Ioannis, Assistant Professor
- Pnevmatikatos Dionisios, Associate Professor
- Stavrakakis Georgios, Professor



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Costas Balas

**Rank:** Associate Professor

**Years in rank:** 8.5 yrs

**Full-time or part-time:** Full-time

**Division:** Electronics and Computer Architecture Division

**Lab affiliation:** Electronics Laboratory

### A – Teaching

- Undergraduate courses taught
  - Electronics I
  - Optoelectronics
- Graduate courses taught
  - Optoelectronics
  - Special Topics on Optoelectronic Biomedical Technology
- Labs taught
  - Electronics I
  - Optoelectronics
- Curriculum & course development
  - New courses / labs developed
    - Five new Optoelectronics edu. Labs developed
  - Lecture notes / slides developed
  - Authored textbooks

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    - J. A. Louwers, A. Zaal, M. Kocken, W.A. ter Harmsel, G.C.M. Graziosi, J.W.M. Spruijt, J.Berkhof, **C. Balas**, E. Papagiannakis, P. J. F. Snijders, C.J.L.M. Meijer, F. J. van Kemenade, R. H. M. Verheijen "Dynamic Spectral Imaging Colposcopy: Higher sensitivity for detection of premalignant cervical lesions"

Accepted for publication in BJOG

- Accepted:
  - J. A. Louwers, A. Zaal, M. Kocken, W.A. ter Harmsel, G.C.M. Graziosi, J.W.M. Spruijt, J.Berkhof, **C. Balas**, E. Papagiannakis, P. J. F. Snijders, C.J.L.M. Meijer, F. J. van Kemenade, R. H. M. Verheijen "Dynamic Spectral Imaging Colposcopy: Higher sensitivity for detection of premalignant cervical lesions" Accepted for publication in BJOG
- Published:
- Publications in refereed conferences
  - Submitted: those published/appeared (see below)
    - V. Margariti, M. Zervakis and **C. Balas** "Wavelet and Physical Parametric Analysis of the Acetowhitening Optical Effect: Comparative Evaluation of Performances in non-invasive Diagnosis of Cervical Neoplasia" *10th IEEE International Conference on Information Technology and Applications in Biomedicine*, Corfu, Greece, November 2-5, 2010
    -
  - Accepted:
    - V. Margariti, M. Zervakis and **C. Balas** "Wavelet and Physical Parametric Analysis of the Acetowhitening Optical Effect: Comparative Evaluation of Performances in non-invasive Diagnosis of Cervical Neoplasia" *10th IEEE International Conference on Information Technology and Applications in Biomedicine*, Corfu, Greece, November 2-5, 2010
  - Published:
    -
- Books and edited book chapters
  - **Costas Balas** et al "*Multi/Hyper-Spectral Imaging*" in Handbook of Biomedical Optics text book, Taylor&Francis Books, Inc, USA, *submitted*
  - **Costas Balas** and Emmanuel Diakomanolis "New technologies in Colposcopy" in Colposcopy text book, Paschalides Ed.

## C – Awards & Distinctions

## D – Funded Projects

- Project proposals submitted:
  - "OncoSeed Diagnostics: *Biology of Circulating Tumour Cells, Distant Metastasis & Development of Liquid Biopsy Methods*". Funding source: «COOPERATION»-SUB-ACTION II:« *Large Scale Cooperative Projects*».
  - "*In vivo Molecular Imaging of Epithelial Pre-Cancers based on Dynamic Optical Scattering Modeling*" Heraklitos
  - Imaging system for assessing papillary response to tunable monochromatic light excitation. Funding source: TUC internal program for supporting graduate research.
  - Compact Mid Infrared Coherent Sources for Active Multispectral Imaging (COMIX) EU STREP
  - INSTantaneous SPETral imaging methods and technologies for BIOMedical diagnosis Theles II (coordinator)
  - Innovative terahertz and spectral imaging techniques for biomedical applications, Theles II

## **E – Professional service**

- Reviewing activities
  - Applied optics, GSRT expert/reviewer for the industrial R&D grant proposals

## **F – Service to the Department and the School**

- Departmental responsibilities
  - 5<sup>th</sup> and 6<sup>th</sup> semester student advisor committee
- School-level responsibilities
  - Member of board of regents

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Tsapras Athanxasios (PhD)
    - Papoutsoglou George (PhD)
    - Georgiou Nikos (MSc)
    - Epitropou George (MSc)
    - Kavadias Vasilis (MSc)
  - PhD. And M.Sc. degrees awarded
    -
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Axilleas Xipolitos
    - Dimitris Illiou
    - Odysseas zografos
  - Diploma theses completed (supervisor)
    - Anastasopoulou Antigoni
    - Galaras Costas
    - Makridou Georgia





## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Matthias Bucher

**Rank:** Assistant Professor (tenure)

**Years in rank:** 6+1/2

**Full-time or part-time:** Full-time

**Division:** Electronics and Computer Architecture

**Lab affiliation:** Electronics Laboratory

### A – Teaching

- Undergraduate courses taught
  - ECE 503 – Design of CMOS Analog Integrated Circuits (Fall 2009)
  - ECE 311 – Electronics II (Spring 2010)
- Graduate courses taught
  - ECE 604 – Special Themes of Analog Integrated Circuit Design (Fall 2009)
- Labs taught
  - ECE 503 – Design of CMOS Analog Integrated Circuits (Fall 2009)
  - ECE 311 – Electronics II (Spring 2010)
- Curriculum & course development
  - Lecture notes/slides developed,  
ECE 311 – Electronics II, ECE 503 – Design of CMOS Analog Integrated Circuits, ECE 604 – Special Themes of Analog Integrated Circuit Design

## B – Publications

- Publications in refereed journals
  - Submitted:
    - F. Krummenacher, A. Bazigos, J.-M. Sallese, **M. Bucher**, E. Seebacher, W. Posch, K. Molnar, M. Tang, “A Physics-Based Analytical Compact Model for the Drift Region of the HV-MOSFET”, submitted, *IEEE Trans. on Electron Devices*.
    - N. Mavredakis, A. Antonopoulos, **M. Bucher**, “Bias Dependence of Low Frequency Noise in 90nm CMOS”, submitted, *Microelectronics Journal*.
  - Accepted-Published:
    - M.-A. Chalkiadaki, **M. Bucher**, “Large-signal RF modelling of MOSFETs with the EKV3 MOSFET model”, *Journal of Telecommunications and Information Technology (JTIT)*, Vol. 1/2010, pp. 25-28, 2010.
- Publications in refereed conferences
  - N. Mavredakis, A. Antonopoulos, **M. Bucher**, “Measurement and Modeling of 1/f Noise in 180 nm NMOS and PMOS Devices”, *5<sup>th</sup> European Conf. on Circuits & Systems for Communications (ECCSC 2010)*, Belgrade, Serbia, Nov. 23-25, 2010.
  - **M. Bucher**, G. Diles, N. Makris, “Analog Performance of advanced CMOS in Weak, Moderate, and Strong Inversion”, *Proc. 17<sup>th</sup> Int. Conf. on Mixed Design of Integrated Circuits and Systems (MIXDES)*, pp. 54-57, Wroclaw, Poland, 24-26 June, 2010.
  - N. Mavredakis, A. Antonopoulos, **M. Bucher**, “Bias Dependence of Low Frequency Noise in 90nm CMOS”, *NSTI-Nanotech 2010*, Vol. 2, pp. 805-808, Anaheim, California, June 21-25, 2010.
- International Workshop Presentations/Tutorial:
  - N. Mavredakis, **M. Bucher**, “Modeling of Low Frequency Noise in 90nm CMOS”, *8<sup>th</sup> Annual Graduate Student Meeting on Electronic Engineering, University Rovira i Virgili (URV)*, Tarragona, Spain, June 28-29, 2010.
  - M.-A. Chalkiadaki, **M. Bucher**, A. Bazigos, “RF Modelling and Parameter Extraction with the EKV3 MOSFET Model”, *8<sup>th</sup> Annual Graduate Student Meeting on Electronic Engineering, University Rovira i Virgili (URV)*, Tarragona, Spain, June 28-29, 2010.
  - **M. Bucher** (Tutorial), “CMOS Device Modeling for Analog/RF Design”, *European Solid-State Circuits Conference (ESSCIRC 2009)*, Athens, September 14-18, 2009.

## C – Awards & Distinctions

## D – Funded Projects

- Current projects:
  - NANOsympraxis, Multigate MOSFET nanotransistors: compact models for current

and noise – development of automated design tools for nanoelectronics, “Synergasia” Project Nr. 998, General Secretariat of Research and Technology (GSRT), National Strategic Reference Framework (2007 – 2013), Duration: 2010 – 2013.

- ANTI-SiC, Development of new transistors and inverter for photovoltaic systems based on Silicon Carbide, “Synergasia” Project Nr. 1181, General Secretariat of Research and Technology (GSRT), National Strategic Reference Framework (2007 – 2013), Duration: 2010 – 2013.
  - NexGenMilliWave, Next Generation Millimeter Wave Backhaul Radio, “Corallia” Hellenic Technology Cluster Initiative in Microelectronics, Phase 2, National Strategic Reference Framework (2007 – 2013), Duration: 2009 – 2012.
  - MEMSENSE, MEMS Based Wireless Sensor Networks, “Corallia” Hellenic Technology Cluster Initiative in Microelectronics, Phase 2, National Strategic Reference Framework (2007 – 2013), Duration: 2009 – 2012.
  - COMpact MOdelling Network (COMON), FP7-PEOPLE-2007-3-1-IAPP, Grant Nr. 218255, Marie Curie Industry Academia Partnership & Pathways, [http://www.compactmodelling.eu/about\\_comon.php](http://www.compactmodelling.eu/about_comon.php), Total Funding 1.921.436 €, PI: M. Bucher, PI’s budget 140.231 €. Duration: Dec. 2008 – Nov. 2012.
- Project proposals submitted:
    - Synergasia, Greek Ministry of Development.
    - Thales, Greek Ministry of Education.
  - Development of Electronics Laboratory infrastructure:
    - ADMOS Filter/switchbox for low frequency noise measurement.
    - Agilent 82357B USB/GPIB Interface
    - Agilent ADS & ICCAP software packages, Cadence IC & System.

## E – Professional service

- Conference Technical Programme Committee service
  - *TPC member, Int. Conf. on Mixed Design of Integrated Circuits and Systems (MIXDES) 2010.*
  - *TPC member, IEEE Workshop on Design and Diagnostics of Electronic Circuits and Systems (DDECS) 2010.*
- Conference Organization
  - *Workshop & Tutorials Chairman, European Solid-State Circuits Conference (ESSCIRC 2009), Athens, September 14-18, 2009.*
  - *Tutorial Organizer, “Nanoscale CMOS Analog Design from Devices to System”, M. Bucher, M. Kayal, G. Gielen, European Solid-State Circuits Conference (ESSCIRC 2009), Athens, September 14, 2009.*
  - *Workshop Organizer, “MOS-AK Meeting”, European Solid-State*

- Reviewing activities
  - *IEEE Trans. on Electron Devices*
  - *IEEE Trans. on Computer Aided Design of Integrated Circuits and Systems*
  - *Solid-State Electronics*
  - *Semiconductor Science and Technology*
  - *Journal of Applied Physics*
- Reviewing of Research Projects
  - *Reviewer for Herakleitos II National Research Projects, Ministry of Education.*

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Director, Electronics Laboratory.
  - Member, Examinatory committee for admission of undergraduate students.

## G – Advising

- Graduate students supervised
  - Ph.D. students supervised (supervisor):
    - Angelos Antonopoulos, Design of nanoscale RF CMOS transceivers, Enrollment: June 2008.
    - George Rozakis, Non-linearity analysis in CMOS power amplifiers, Enrollment: Oct. 2008.
    - Nikos Mavredakis, Noise in high-voltage MOSFETs (HVMOSFETs), Enrollment: July 2010.
  - M.Sc. theses completed (supervisor):
    - Nikos Mavredakis, Characterization and modelling of low frequency noise in advanced CMOS technology, July 2010.
  - M.Sc. students supervised (supervisor):
    - Athanasios Dimakos, Low voltage analog design techniques, Enrollment: Oct. 2009.
    - Maria-Anna Chalkiadaki, Design of RF CMOS power amplifier (PA), Enrollment: Oct. 2008.
    - Nikos Makris, Design of RF CMOS voltage controlled oscillators (VCOs), Enrollment: Nov. 2006.
- Undergraduate students supervised
  - Diploma theses completed (supervisor):
    - Theodora Tsironikou, Automated parameter extraction system for BSIM4 to EKV3 model, July 2010.
    - Prodromos Prodromou, Development of a MOSFET benchmarking tool in Cadence, May 2010.
    - George Diles, Study of transconductances in advanced CMOS technology, Jan. 2010.
    - Athanasios Dimakos, Low voltage analog design techniques, Oct. 2009.
  - Diploma students (supervisor):
    - George Volanis, Design of a low-voltage Sigma-Delta Analog-to-Digital Converter for wireless receiver.
    - Andreas Bombos, Study of harmonic distortion in advanced CMOS.
    - Apostolos Tsivitis, Study of 1/f noise in MOS transistors.
    - George Smaragdos, Design of integrated filters based on current-mode OPAMPs.
    - Tassos Grammatikos, CMOS varactor modeling.
    - Vassilis Mylonakis, Design of CMOS variable gain amplifier (VGA).
    - George Kargakis, Analysis of zero-VT MOSFETs.
    - Apostolos Spanos, RF Noise in advanced CMOS.
    - Nicolas Gegios, RF CMOS modeling.

- Yannis Kyriakopoulos, Design automation of basic configurations of transistor amplifiers.
- Ilias Chlis, Study of subthreshold SRAM.
- Diploma theses completed (committee member):
  - Ifigenia Pologiorgi, Cartography of spatial variations in intensity of backscattering of radiation as a new criterion for the detection of epithelic neoplasia.
  - George Vlassis, Modelling of a 20MW hybrid wind/hydroelectric system in Crete.
  - George Pligoropoulos, Simulation and optimization of a hybrid photovoltaic system with hydrogen storage and fuel cells.
  - Georgia Makridou, Hyperspectral microscopy and algorithms of spectral classification and cartography of chromatic oestrogen acceptors of breast cancer.



## Annual Activity Report

*For the period: September 1, 2009 to August 31, 2010*

**Name:** Apostolos Dollas

**Rank:** Professor

**Years in rank:** 9

**Full-time or part-time:** Full Time

**Division:** Electronics and Computer Architecture (HRY)

**Lab affiliation:** Microprocessor and Hardware Laboratory

### A – Teaching

- Undergraduate courses taught
  - HRY 101 - Logic Design (mandatory)
  - HRY 211 - Advanced Logic Design (mandatory)
- Graduate courses taught
  - HRY 631 – Special Topics on Reconfigurable Computing
- Labs taught
  - Supervised the labs of HRY 101
  - Supervised the labs of HRY 211, which I had completely re-written one year earlier on a different platform than the one previously used, introducing mandatory hands-on lab exercises with Xilinx Spartan FPGA's.
- Curriculum & course development
  - Lecture notes / slides developed: Revised the HRY 211 (Advanced Logic Design) class notes which were distributed in preliminary form through the web-based e-learning environment Webcourses.

### B – Publications

- Publications in refereed journals
  - Submitted
    - Raghudeep Kannavara, Sukarno Mertoguno, **Apostolos Dollas**, Peter Athanas, Nikolaos Bourbakis, “SCAN SP – Secure Processor and its Crypto Capabilities”, *IEEE Transactions on Secure and Dependable Computing*.
    - Grigorios Chrysos, **Apostolos Dollas**, Nikolaos Bourbakis, “A Low-Cost Embedded Software-Reconfigurable Color Segmentation Architecture for Real-Time Processing Systems,” *Journal of Electronic Imaging (JEI)*.
    - K. Papadimitriou, **A. Dollas**, S. Hauck, “Performance of Partial Reconfiguration in FPGA Systems: A Survey and a Cost Model,” *ACM Transactions on Reconfigurable Technology and Systems (TRETs)*.

- Accepted
- Published
  - K. Papadimitriou, A. Anyfantis, **A. Dollas**, “An Effective Framework to Evaluate Dynamic Partial Reconfiguration in FPGA Systems,” *IEEE Transactions on Instrumentation and Measurement*, vol. 59, No. 6, pp. 1642-1651, June, 2010.
- Publications in refereed conferences
  - Accepted
    - Miltiadis Smerdis, Pavlos Malakonakis, Apostolos Dollas, “Carlothello: An FPGA Based Monte Carlo Othello Player”, Accepted as short paper at *The 2010 International Conference on Field-Programmable Technology (FPT '10) (accepted after review as a top-3 finalist in the 2010 Design Competition)*.
    - Pavlos Malakonakis, Euripides Sotiriades, **Apostolos Dollas**, “GE3: a Single Chip Client-Server Architecture for Golomb Ruler Derivation”, Accepted as short paper at *The 2010 International Conference on Field-Programmable Technology (FPT '10)*.
    - M. Lakka, A. Desarti, G. Chrysos, E. Sotiriades, I. Papaefstathiou, **A. Dollas**, “Reconfigurable Computing IP Cores for Multiple Sequence Alignment”, Accepted as short paper at the *International Conference on Bioinformatics Models, Methods and Algorithms (Bioinformatics 2011)*, short paper, Rome, Italy, Jan. 26-29, 2011.
  - Published (all papers fully refereed)
    - Grigorios Chrysos, Euripides Sotiriades, Ioannis Papaefstathiou and **Apostolos Dollas**, “An FPGA based Coprocessor for Gene Finding Using Interpolated Markov Model (IMM)”. *Proceedings of the International Conference on Field Programmable Logic and Application (FPL 2009)*, pp. 683-686, Prague, Czech Republic, August 31 – September 2 2009.
    - Pavlos Malakonakis, Miltiadis Smerdis, Euripides Sotiriades, **Apostolos Dollas**, “An FPGA-Based Sudoku Solver based on Simulated Annealing Methods”, *Proceedings of the 2009 International Conference on Field-Programmable Technology (FPT'09)*, pp. 522-525, Sidney, Australia, December 9-11 2009. (3rd place in the Design Competition).
    - A. Ilias, K. Papadimitriou, **A. Dollas**, “Combining Duplication, Partial Reconfiguration and Software for On-line Error Diagnosis and Recovery in SRAM-based FPGAs”, in *Proceedings of the IEEE International Symposium on Field Programmable Custom Computing Machines (FCCM)*, pp. 73-76, Charlotte NC, USA, May 2010.
    - Miltiadis Smerdis, Panagiotis Dagritzikos, Grigorios Chrysos, Euripides Sotiriades, **Apostolos Dollas**, “Reconfigurable Systems for the Zuker and Predator Algorithms for Secondary Structure Prediction of Genetic Data”. *Proceedings, International Conference on Field Programmable Logic and Application (FPL 2010)*, Aug. 29 – Sep. 2, Milano, Italy, 2010.
- Books and edited book chapters
  - A. Dollas, The Art of Microelectronic Systems (under preparation), A. K Peters.



## C – Awards & Distinctions

- Fellowships, Visiting Professorships
- Invited Lectures
  - Keynote Speaker, *Annual IEEE Computer Society Symposium on VLSI (ISVLSI)*, Lixouri, Greece, July 5-7, 2010, delivering a lecture on “Reconfigurable Architectures for Bioinformatics Applications”.
- International Competitions
  - Third place in the International Conference on Field Programmable Technology Design Competition (a Sudoku Solver up to dimension 15 running on actual XUP standardized hardware platforms), Sydney, Australia, Dec. 9-11, 2009.

## D – Funded Projects

- Current projects:
  - Project “*ROTA- Design and Development of a Novel System for the Telemanagement of Ships with High-Speed Internet Bidirectional Communications*”, Greek Secretariat of Research and Technology GSRT under program Synergasia, funded at 300,000 Euros (Telecommunication Systems Institute - TSI Budget 66,378 Euros), 2010 (3-year project).
  - Project “*MERIT- Research and Development of an Electronic Prototype System for the Safety of Sea Transportation with Novel Use of RFID Technologies*”, Greek Secretariat of Research and Technology GSRT under program Synergasia, funded at 300,000 Euros (TUC Budget 66,904 Euros), 2010 (3-year project).
  - Principal investigator for the entire Technical University of Crete in the student’s practical training program, coordinating the project “Practicum at the Technical University of Crete”, funded by the Greek Ministry of Education and Religious Affairs at 697,364 Euros for three years (2009-2012).
  - GSRT “IRAKLEITOS: Research Scholarships for TUC”, Program. TUC Budget 398,778 Euros. Under it is the sub-program “Structures for Reconfigurable Computing”, (PhD Thesis support for E. Sotiriades), Apostolos Dollas, PI, Program budget: 32,229 Euros (all budget is in TUC)
  - GSRT PENED 2003, Apostolos Dollas, PI, Manolis Antonidakis, Spyros Blionas, Co-PI’s, “Methodology and Technology for the Development of Multiprocessor Wireless Communication Systems and Reconfigurable Computing Circuits”, Total budget: 151,200Euros, (TUC Budget roughly 1/3 of the total budget plus overhead for the entire project). Project awarded in 2005.

## E – Professional service

- Conference Technical Program Committee service
  - Program Committee Member 18th IEEE Symposium on Field Programmable Custom Computing Machines (FCCM), Charlotte, USA, May 2-4, 2010.
  - ◆ Program Committee Member, 19<sup>th</sup> IEEE/ACM International Symposium on Field Programmable Logic (FPL), Prague, Czech Republic, Aug 31 – Sept. 2, 2009.
  - ◆ Program Committee Member, IEEE/ACM 20<sup>th</sup> International Symposium on Field Programmable Logic (FPL), Milan, Italy, Aug 29 – Sept. 2, 2010.
  - ◆ General co-Chairman w/ Prof. Manfred Glesner (TUD) and Program Committee

Member, 21<sup>st</sup> IEEE/ACM International Symposium on Field Programmable Logic (FPL), Chania, Greece, 2011.

◆ Program Committee Member, International Conference on Field Programmable Technology (FPT, IEEE Sponsored), Sydney, Australia, December 9-11, 2009.

◆ Program Committee Member, International Conference on Field Programmable Technology (FPT, IEEE Sponsored), Beijing, China, December 10-12, 2010.

- Member of the 3-member election recommendation committee and the board of electors for an Associate Professor at the Democretian University of Thrace.
- Member of the board of electors for an Associate Professor at the University of Athens.
- Member of the board of electors for an Associate Professor at the University of the Peloponnese.
- Member for a tenure committee at the University of Cyprus (on-going process).
- Member of several election committees and recommendation committees and faculty elections at the Dept. of ECE of the Technical University of Crete.
- Reviewing activities
  - Several international conferences, including all in which I participate in the program committee and journals

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Faculty Advisor to the 1<sup>st</sup> semester students
  - Member, Undergraduate Studies Committee
  - Member of the Student Placement Committee, supervising the examination in the subject of Logic Design for graduates from other Departments who want to enroll at ECE.
  - Member of faculty recommendation committees in several faculty elections, member of the election board and participation in the election process of several faculty elections.
- Responsibility for Department-wide projects
  - Participated actively in the large instrumentation proposal of Assistant Professors A. Bletsas, A. Deligiannakis and Y. Papaefstathiou.
- School-level responsibilities
  - TUC Senate – appointed, TUC-wide principal investigator for the student’s practical training program, coordinating the 697,363 Euro project “Practicum at the Technical University of Crete” for three years (2009-2012).

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised (advisor, completed)
    - (None)
  - Ph.D. and M.Sc. students supervised (advisor, in progress)
    - Papademetriou, Kyprianos (PhD)
    - Sotiriades, Euripides (PhD)
    - Chrysos, Grigorios (PhD)
    - Efsthathiou, Dionissios (MS)
    - Lakka, Matina (MS)

- Malakonakis, Pavlos (MS)
  - Smerdis, Miltiadis (MS)
  - Ilias, Anargyros (MS)
  - Nikoloudakis, George (MS)
- PhD. And M.Sc. degrees awarded (committee member)
  - Mplemenos, George (MS)
  - Papadopoulos, Constantinos (MS)
  - Hatziparaskevas, George (MS)
  - Siskos, George Alexandros (MS)
- PhD and M.Sc. Degrees (committee member)
  - Mavroidis, Ioannis (PhD)
  - Mavroidis, Iakovos (PhD)
  - Kornaros, George (PhD)
  - Nikitakis, Antonios (PhD)
  - Meidanis, Dimitrios (PhD)
  - Christou, Panagiotis (MS)
  - Dagritzikos, Panagiotis (MS)
  - Kartsonakis, Ioannis (MS)
  - Agadakos, Ioannis (MS)
- Undergraduate students supervised
  - Diploma theses in progress
    - Kouinis, Konstantinos
    - Koukousoulas, Pantelis
    - Gegios, Nikolaos
  - Diploma theses completed (supervisor)
    - Desarti, Athina
    - Lakka, Matina
    - Smerdis, Miltiadis
    - Kokkalis, Stylianos
    - Kottikas, Constantinos
    - Spanakis, Michael
    - Elias, Anargyros
    - Nikoloudakis, George
    - Vasilopoulos, Dimitrios
    - Georgiadis, Nikodemos
  - Diploma theses in progress (committee member)
    - Raptis, Grigoris
    - Andronikidis, George
  - Diploma theses completed (committee member)
    - Chrysanthou, Nafsika
    - Makris, Ioannis
    - Stefanatos, Kostas
    - Tsapeli, Fani
    - Ntortou, Eiranna
    - Founta, Ifigeneia
    - Markopoulos, Spyridon

- Tzanoudakis, Theodore
- Agadakos, Ioannis
- Bouris, Dimitrios



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Kostas Kalaitzakis

**Rank:** Professor

**Years in rank:** 7

**Full-time or part-time:** Full-time

**Division:** Electronics & Computer Architecture

**Lab affiliation:** Electric Circuits & Renewable Energy Sources Lab.

### A – Teaching

- Undergraduate courses taught
  - HRY 402 - Electric Measurements and Sensors (7<sup>th</sup> semester)
  - HRY 212 – Electric Circuits Analysis (4<sup>th</sup> semester)
- Graduate courses taught
  - HRY 602 – Special topics on Electric Measurement Systems
- Labs taught
  - HRY 402 - Electric Measurements and Sensors (7<sup>th</sup> semester)
  - HRY 212 – Electric Circuits Analysis (4<sup>th</sup> semester)
- Curriculum & course development
  - New courses / labs developed
    - HRY 402 - Electric Measurements and Sensors (7<sup>th</sup> semester). Redesigned from scratch. New exercises manual authored.
  - Lecture notes / slides developed
  - Authored textbooks

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    -
  - Accepted:
    - Diakaki C., Grigoroudis E., Kabelis N., Kolokotsa D., **Kalaitzakis K.**, Stavrakakis G., "A multi-objective decision model for the improvement of energy efficiency in buildings", *Energy*, in press.

- Kolokotsa D., Rovas D., Kosmatopoulos E., **Kalaitzakis K.**, "A Roadmap Towards Intelligent Net Zero- and Positive-Energy Buildings", accepted to *Solar Energy*.
- Publications in refereed conferences
  - Published:
    - Sergaki E. S., Stavrakakis G. S., **Kalaitzakis K.**, Piromalis D., "Algorithm Implementation of an hybrid Efficiency controller incorporated to a PMSM standard FOC variable speed motor drive", *Proc. 35th Annual Conf. of the IEEE Industrial Electronics Society IECON09*, 3-5 Nov. 2009, Porto, Portugal.
    - Sergaki E. S., Essounbouli N., **Kalaitzakis K.**, Stavrakakis G. S., "Fuzzy Logic Control for Motor Flux Reduction during Steady states and for Flux Recovery in Transient states of Indirect FOC AC Drives", *Proc. Int. Conf. on Electrical Machines of the IEEE Industrial Electronics Society, ICEM10*, 6-8 Sep. 2010, Rome, Italy.
- Books and edited book chapters
  - Kalaitzakis K., Koutroulis E., "Electric Measurements and Sensors, Principles of Operation and Electronic Measurement Systems Design", Kleidarithmos, 2010, pp. 1-760, in Greek.
- Patents

## C – Awards & Distinctions

## D – Funded Projects

- Current projects:
  - Researcher in a project entitled "Positive-Energy Building thru Better Control Decisions (PEBBLE)", project number 248537, project coordinator Technical University of Crete, funded by EE in the framework FP7-ICT-2009.6.3: ICT FOR ENERGY EFFICIENCY, 2010-2012, total cost 2.4 M€, 500 k€ for the TUC.
  - PI in a project entitled "Analytical Mathematical Model of an Innovative Solar Thermal System for Electric Energy Production", funded by the Research Committee of the Technical University of Crete, total cost 15 k€.
- Project proposals submitted:
  - "Zero or Positive Energy Buildings", as PI, in the framework of THALIS, funded by the Greek Ministry of Education.
  - "Integrated Energy Planning in Tertiary Sector Buildings through Multi-objective Mathematical Programming", in the framework of THALIS, funded by the Greek Ministry of Education.
  - "Development of an Integrated Smart Solar Cell System", in the framework of THALIS, funded by the Greek Ministry of Education.

## E – Professional service

## F – Service to the Department and the School

## G – Advising

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - K. Papadakis (M.Sc.), year of initial enrollment in M.Sc. program: 2004.
    - V. Bakirtzoglou, year of initial enrollment in M.Sc. program: 2009.
    - A. Vasilomichelaki, year of initial enrollment in M.Sc. program: 2010.
    - G. Perrakis, year of initial enrollment in M.Sc. program: 2010.
    - M. Tsirantonakis, year of initial enrollment in M.Sc. program: 2010.
  - PhD. And M.Sc. degrees awarded
    -
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - P. Kalodimas
    - H. Papaztavrou
    - G. Spyridakis
    - T. Mallisovas
    - K. Sfakianakis
    - T. Vasiloudis
    - J. Zoufios
    - A. Baryaba
    - G. Palolli
    - Τσόγκας
    - G. Dalaperas
    - A. Pafilis
    - P. Matzioros
  - Diploma theses completed (supervisor)
    - S. Founda
    - T. Dafoulis
    - P. Doriakis
    - A. Sfondouri
    - T. Mantzioros
    - K. Kagarakis
    - G. Manouras



## **Annual Activity Report**

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Eftichios Koutroulis

**Rank:** Adjunct Lecturer

**Years in rank:** 1

**Full-time or part-time:** Part-time

**Division:** Electronics & Computer Architecture

**Lab affiliation:** Electronics Laboratory

### **A – Teaching**

- Undergraduate courses taught
  - ACE 511 - VLSI and ASIC System Design (fall semester 2009)
- Labs taught
  - ACE 301 - Electronics II (spring semester 2010)
- Curriculum & course development
  - Lecture notes / slides developed:
    - ACE 511 -VLSI and ASIC System Design (fall semester 2009)

### **B – Publications**

- Publications in refereed journals
  - Submitted: same as published (see below)
  - Accepted: same as published (see below)
  - Published:
    - **E. Koutroulis**, D. Kolokotsa, “Design Optimization of Desalination Systems Power-Supplied by PV and W/G Energy Sources”, *Desalination*, Vol. 258, pp. 171-181, 2010.
- Publications in refereed conferences
  - Submitted:
    - **E. Koutroulis**, F. Blaabjerg, “Design Optimization of Grid-Connected PV Inverters”, submitted for review at the 26<sup>th</sup> Annual IEEE Applied Power Electronics Conference & Exposition (APEC 2011).



- Books and edited book chapters:
  - K. Kalaitzakis, E. Koutroulis, “Electric Measurements and Sensors: Principles & Design of the Electronic Measurement Systems” (in Greek), Klidarithmos Publications, ISBN: 978-960-461-331-1, 2010, 760 pages.

## **C – Awards & Distinctions**

## **D – Funded Projects**

- Project proposals submitted:
  - THALIS call

## **E – Professional service**

- Reviewing activities
  - IEEE Transactions on Industrial Electronics
  - IEEE Transactions on Instrumentation & Measurement
  - IEEE Transactions on Circuits and Systems II
  - IET Power Electronics
  - IET Renewable Power Generation
  - Electronics Letters
  - Renewable Energy
  - Energy
  - 26<sup>th</sup> Annual IEEE Applied Power Electronics Conference & Exposition
  - 17<sup>th</sup> IEEE International Conference on Electronics, Circuits and Systems
  - IEEE International Conference on Industrial Technology 2010 (ICIT 2010)
  - 36<sup>th</sup> Annual Conference of the IEEE Industrial Electronics Society (IECON 2010)

## **F – Service to the Department and the School**

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Matina Lakka (Msc Student, 1<sup>st</sup> year in program)
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Christos Koukouzas
    - Manos Papagiannakis
    - Christos Lykas
    - Nikos Petridis
    - Ioannis Kalogiannakis



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Ioannis Papaefstathiou

**Rank:** Assistant Professor

**Years in rank:** 3

**Full-time or part-time:** Full-time

**Division:** Electronics and Computer Architecture

**Lab affiliation:** Microprocessor and Hardware laboratory

### A – Teaching

- Undergraduate courses taught
  - HRY 401 – Embedded Systems Design (Fall 2009)
  - HPY 412 – Computer Architecture (Spring 2010)
- Graduate courses taught
  - HRY 501 – Design of Special Purpose (Spring 2010)
- Labs taught
  - HRY 401 – Embedded Systems Design (Fall 2009)
  - HPY 412 – Computer Architecture (Spring 2010)
- Curriculum & course development
  - New courses / labs developed : HRY 501 – Design of Special Purpose
  - Lecture notes / slides developed : HRY 412 Computer Architecture
  - Authored textbooks

### B – Publications

- Publications in refereed journals
  - Accepted
    - Theodore Zahariadis, Helen Leligou, Panagiotis Karkazis, Panagiotis Trakadas, **Ioannis Papaefstathiou**, Charalambos Vangelatos, Lionel Besson, "Design and implementation of a trust-aware routing protocol for large WSNs", *Int. Journal of Network Security & Its Applications*, To appear

- Published
  - I. Mavroidis, I. Mavroidis, **I Papaefstathiou**, “Accelerating Emulation and Providing Full Chip Observability and Controllability at Run-Time” *IEEE Design & Test*, November/December 2009 (vol. 26 no. 6), pp. 84-94
  - K. Papadopoulos, **I. Papaefstathiou**, “Titan-R: A Reconfigurable hardware implementation of a high-speed compressor/ decompressor”, *ACM Transactions on Reconfigurable Technology and Systems (TRETs)* Volume 3, Issue 2 (May 2010)
  - Diomidis I. Katzourakis , **Yannis Papaefstathiou**, Michail G. Lagoudakis M., "An Open-Source Scaled Automobile Platform for Fault -Tolerant Electronic Stability Control", *IEEE Transactions on Instrumentation and Measurement*, vol. 59, no. 9, pp. 2303-2314, 2010.
- Publications in refereed conferences
  - Submitted: those published/appeared (see below), plus
    - A. Brokalakis, **I. Papaefstathiou**, “Using Hardware-based Forward Error Correction to reduce the overall energy consumption of WSNs”, submitted to IEEE Design Automation and Test in Europe (DATE 2011), March 14-18, Grenoble, France
    - N. Chrysanthou, G. Chrysos, **I. Papaefstathiou**, “Parallel Accelerators For GlimmerHMM Bioinformatics Algorithm” , submitted to IEEE Design Automation and Test in Europe (DATE 2011), March 14-18, Grenoble, France
    - A. Brokalakis, K. Papadopoulos, G.G. Mplemenos, **I. Papaefstathiou**, “RESENSE: An Innovative, Reconfigurable, Powerful and Energy Efficient WSN Node”, Submitted to *IEEE International Conference on Communications (ICC 2011)*, June 5-9, Kyoto, Japan.
  - Accepted: same as published (see below) plus
    - G. Mplemenos, K. Papadopoulos, **I. Papaefstathiou** “Using Reconfigurable Hardware Devices in WSNs for Reducing the Energy Consumption of Routing and Security Tasks”, *IEEE GLOBECOM 2010*, December 6-10, Maimi, USA
    - Helen C. Leligou, Luis Redondo, Theodore Zahariadis, Daniel Rodriguez, Panagiotis Karkazis, **Ioannis Papaefstathiou**, “Reconfiguration in Wireless Sensor Networks”, *IEEE DeSE 2010* conference, London UK, September 2010.
  - Published
    - K. Theocharoulis, C. Manifavas, **I. Papaefstathiou**, “Implementing Rainbow Tables in High-end FPGAs for Super-fast Password Cracking”, *IEEE International Conference on Field Programmable Logic and Applications (FPL)*, 2010, Aug 31- Sept 2, Rome (Acceptance rate of full papers 23%)
    - G-G. Mplemenos, P. Christou and **I. Papaefstathiou**, "Using Reconfigurable Hardware Devices in WSNs for Accelerating and Reducing the Power Consumption of Header Processing Tasks", *IEEE Advanced Networks and Telecommunication Systems (IEEE ANTS 2009)*, 14-16 December 2009, New Delhi, India (Acceptance rate 33%)
    - Dimitrios Meintanis and Ioannis Papaefstathiou “A Module Based, Partial Reconfigurable Design for Solving Sparse Linear Systems Over GF(2)”, *The 2009 International Conference on Field-Programmable Technology, FPT*

## C – Awards & Distinctions

- Invited Keynote Speaker, IEEE International Conference on Cluster Computing 2010 (Cluster 2010), Heraklion, Crete, Greece, 20-24 September 2010
- Invited Keynote Speaker, 8th IEEE Workshop on Intelligent Solutions in Embedded Systems (8th WISES) Heraklion, Crete, Greece, 8-9 July 2010

## D – Funded Projects

- Current projects:
  - European Research Grant EUREKA Programme, Title: *Reconfigurable Ultra-Autonomous Novel Robots (RUNNER)*, December 2010
  - European Research Grant Capacities Programme (Research for the benefit of SMEs), Title: *Increasing EU citizen security by utilising innovative intelligent signal processing systems for euro-coin validation and metal quality testing (SAFEMETAL)* December 2010
  - General Secretariat for Research and Technology Grant, Collaboration Programme Title: *Intelligent Vehicle Intercommunication System for Increased Security in Highways and Urban Environments* September 2010
- Project proposals submitted:
  - Participating in “WSN DPCM”, FP7-ARTEMIS proposal, grade 52/60 **will be funded** from 1/04/11
  - Participating in “nShield”, FP7-ARTEMIS proposal, grade 52/60 **will be funded** from 1/04/11

## E – Professional service

- Conference Technical Program Committee service
  - IEEE DATE 2010
  - IEEE FPL 2010
  - IEEE ICEAC 2010
  - IEEE PARMA 2010
  - UCHPC 2010
  - Several other smaller workshops
- Reviewing activities
  - Regular reviewer for *Elsevier Microprocessors and Microsystems Journal*,
  - Regular reviewer for *IEEE Transactions on Circuits and Systems for Video Technology*

## F – Service to the Department and the School

## G – Advising

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Iakovos Mavroidis (Ph.D). Year of initial enrollment in Ph.D. program: 2005.
    - Antonis Nikitakis (Ph.D.). Year of initial enrollment in program: 2008
    - Panagiotis Karkazis, (M.Sc.). Year of initial enrollment in program: 2010.
    - Panagiotis Dagritzikos, (M.Sc.). Year of initial enrollment in program: 2009.
    - Ioannis Agadakos, (M. Sc.). Year of initial enrollment in program: 2010
    - Apostolos Perdikakis (M.Sc.). Year of initial enrollment in program: 2010
    - Ioannis Kartsonakis (M.Sc.). Year of initial enrollment in program: 2010
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - N. Pogkas
    - D. Daskalakis
    - K. Mountakis
    - S. Papaioannou
    - D. Tsiamasiotis
    - G. Raptis
    - M. Kalenteri
  - Diploma theses completed (supervisor)
    - I. Agadakos
    - N. Chrysanthou
    - K. Mountakis
    - T. Tzanakakis
    - G. Mpouris.



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Dionisios Pnevmatikatos

**Rank:** Professor

**Years in rank:** 1

**Full-time or part-time:** Full-time

**Division:** Electronics and Computer Architecture

**Lab affiliation:** Microprocessor and Hardware laboratory

### A – Teaching

- Undergraduate courses taught
  1. HRY 201 – Digital Computers (Fall 2009)
  2. HRY 311 – Computer Organization (Spring 2010)
- Graduate courses taught
  1. HRY 613 – Parallel and Distributed Computer Architecture (Spring 2010)
    - Labs taught
      1. HRY 201 – Digital Computers (Fall 2009)
      2. HRY 411 – Computer Organization (Spring 2010)
    - Curriculum & course development
      1. New courses / labs developed  
—
      2. Lecture notes / slides developed
        - Digital Computers (Update)
        - Computer Organization (Update)
      3. Authored textbooks  
—

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    - I. Sourdis, A. Arelakis, **D. Pnevmatikatos**, G. Gaydadjiev, “Scalable Deep Packet Inspection using Prefiltering,” Submitted to *IEEE Transactions on Dependable and Secure Computing*, June 2010

- Accepted:
  - "Explicit Communication and Synchronization in SARC," M. G.H. Katevenis, V. Papaefstathiou, S. Kavadias, **D. Pnevmatikatos**, D. Nikolopoulos, Federico Silla, *IEEE Micro*, 2010.
- Published:
  - Book Editorial: Gritzalis, S., Plexousakis, D., & **Pnevmatikatos, D. N.** (Eds.). (2009). PCI 2009, 13th *Pan-Hellenic conference on informatics*, 10-12 September 2009, IEEE Computer Society.
  - Book Chapter: George Kornaros, Ioannis Papaeystathiou, and **Dionisios Pnevmatikatos**, "Real-time Monitoring and Diagnostic Services for Networks-on-Chip", Chanter 9, *Networks-on-Chips: Theory and Practice*, Publisher: Taylor & Francis Group LLC - CRC Press, Editors: Fayez Gebali, Haytham Elmiligi, and M.Watheq El-Kharashi, 2009
- Publications in refereed conferences
  - Published:
    - Giorgos Passas, Manolis Katevenis, **Dionisios N. Pnevmatikatos**, "A 128 x 128 x 24Gb/s Crossbar Interconnecting 128 Tiles in a Single Hop and Occupying 6% of Their Area", *International Symposium on Networks-on-Chips (NOCS) 2010*, pp. 87-95.
    - Siozios K., Soudris D., **Pnevmatikatos D.**, "A Framework for Enabling Fault Tolerance in Reconfigurable Architectures", *6th International Symposium on Applied Reconfigurable Computing*, pp. 257–268, Bangkok, Thailand, 17 - 19 March 2010.
    - Kontos D., Papaefstathiou I., **Pnevmatikatos D.**, "Design Space Exploration of Reconfigurable Systems for Calculating Flying Object's Optimal Noise Reduction Paths", *FPL'09 19th International Conference on Field Programmable Logic and Applications*, pp 282 - 287, Prague, September 2009.
    - Kyriakoulakos K., **Pnevmatikatos D.**, "A Novel Sram-Based FPGA Architecture for Efficient TMR Fault Tolerance Support", *FPL'09 19th International Conference on Field Programmable Logic and Applications*, pp 193 - 198, Prague, September 2009
    - Stamatis G. Kavadias, Manolis G.H. Katevenis, Michail Zampetakis, and Dimitrios S. Nikolopoulos. 2010. On-chip communication and synchronization mechanisms with cache-integrated network interfaces. In *Proceedings of the 7th ACM international conference on Computing frontiers (CF '10)*, pp. 217-226.

## C – Awards & Distinctions

## D – Funded Projects

- Project proposals submitted:

- Departmental Practical Training proposal

## **E – Professional service**

- Conference Technical Program Committee service
  - Conference Technical Committee Member:
    - International Conference on Field Programmable Logic and Applications (FPL) 2010
    - International Conference on Embedded Computer Systems: Architectures, Modeling, and Simulation (IC-SAMOS) 2010
    - International Workshop on Rapid System Prototyping (RSP) 2010
    - IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-Soc) 2009
    - 28<sup>th</sup> IEEE International Conference On Computer Design (ICCD), 2010
    - 39<sup>th</sup> International Conference on Parallel Processing (ICPP), 2010
  - Workshop Technical Committee Member:
    - HIPEAC-RC (Reconfigurable Computing) 2010
    - HIPEAC- Interconnection Network Architectures: On-Chip, Multi-Chip (INA-OCMC) 2010
    - 8th IEEE Workshop on Intelligent Solutions in Embedded Systems (WISES 2010)
- Conference Organization (specify role)
  - Program Track Chair:
    - Design and Test Europe (DATE), Chair, Architecture and Microarchitecture Track, 2010
- Reviewing activities
  - Journal Reviewer:
    - ACM TECS
    - Computer Architecture Letters
    - IEEE TVLSI
  - Conference Reviewer:
    - The 43rd Annual IEEE/ACM International Symposium On Microarchitecture (MICRO), 2010

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Department Co-Chair
  - Director, Microprocessor and Hardware (MHL) Laboratory
  - Undergraduate Program Committee Member
  - Graduate Program Committee Member
  - Responsible for the Department-wide practical training project
- School-level responsibilities
  - University Senate (Chairman replacement)
  - University Disciplinary committee
  - University Graduate committee



- Επιτροπή Ένορκης Διοικητικής Εξέτασης

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - G. Kornaros Ph.D.
    - I. Mavroidis Ph.D.
    - S. Koidis M.Sc.
  - PhD. And M.Sc. degrees awarded
  - Diploma theses completed (committee member)
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Πέτσα Αικατερίνη
    - Ανδρονικίδης Γεώργιος
  - Diploma theses completed (supervisor)\
    - Μαρκόπουλος Σπυρίδων
    - Σιναπίδης Ευάγγελος
    - Τρουλλινός Μιχαήλ
  - Diploma theses completed (committee member)
    - Γεωργιάδης Νικόδημος
    - Βασιλόπουλος Δημήτριος
    - Ηλίας Ανάργυρος
    - Κόκκαλης Στυλιανός
    - Ντόρτου Ειρήνη
    - Σμέρδης Μιλτιάδης
    - Χρυσάνθου Ναυσικά
    - Καρτσωνάκης Ιωάννης
    - Ράπτης Γρηγόριος
    - Λάκκα Ματίνα
    - Στεφανάτος Κωνσταντίνος
    - Σπανάκης Εμμανουήλ
    - Νικολουδάκης Γεώργιος



## Annual Activity Report

*For the period: 1-9-2009 to 31-8-2010*

**Name:** Stavrakakis George

**Rank:** Professor

**Years in rank:** 15

**Full-time or part-time:** Full-time

**Division:** Electronic and Computer Architecture

**Lab affiliation:** Electric Circuits and Renewable Energy Sources

### A – Teaching

- Undergraduate courses taught
  - Basic Circuit Theory (HRY 202)
  - Renewable Energy Sources (HRY 416)
- Graduate courses taught
  - Advanced topics in Optimal Control (SYS 603)
- Labs taught
  - Basic Circuit Theory (HRY 202)
  - Renewable Energy Sources (HRY 416)
- Curriculum & course development
  - New courses / labs developed : Renewable Energy Sources (HRY 416)
  - Revision of courses : Basic Circuit Theory (HRY 202)
  - Lecture notes / slides developed: Renewable Energy Sources (HRY 416)
  - Authored textbooks : None

### B – Publications

- Publications in refereed journals
  - Published:
    - T. Nikolaou , I. Skias , D. Kolokotsa , **G. Stavrakakis**, “Virtual Building Dataset for energy and indoor thermal comfort benchmarking of office buildings in Greece”, Energy and Buildings 41 (2009) 1409–1416.
- Publications in refereed conferences

- Published:
  - Eleftheria S. Sergaki, Dimitris Piromalis, Nikolaos M. Afentakis and **George S. Stavrakakis**, “Methodology of Algorithm Implementation of a PMSM standard variable Speed FOC Motor Drive incorporating an Efficiency Controller”, *The 2009 World Congress on Power and Energy Engineering, WCPEE'09*, October 5-8, 2009, Cairo, Egypt.
  - Eleftheria S. Sergaki, Nikolaos M. Afentakis and **George S. Stavrakakis**, “A Hybrid Loss Minimization Controller incorporated to a PMSM speed FOC motor drive, based on a General Loss Model and on a Fuzzy Logic Search Controller, for Transient and Steady States”, *The 2009 World Congress on Power and Energy Engineering, WCPEE'09, October 5-8, 2009, Cairo, Egypt.*
  - Eleftheria S. Sergaki, **George S. Stavrakakis**, Kostas C. Kalaitzakis, Dimitris Piromalis, “Algorithm Implementation of an hybrid Efficiency controller incorporated to a PMSM standard FOC variable speed motor drive”, *IEEE IECON 2009 the 35th Annual Conference of the IEEE Industrial Electronics Society*, 3-5 November 2009 Alfandega Congress Center, Porto, Portugal.
  - Nikos Kabelis, Evangelos Grigoroudis, Christina Diakaki, Dionyssia Kolokotsa, Kostas Kalaitzakis and **Giorgos Stavrakakis**, “A multi-objective decision support system for the improvement of energy efficiency in buildings”, *Clima 2010 "Sustainable Energy Use"*, 10<sup>th</sup> Federation of European HVAC Associations 10th REHVA World Congress, 9-12 May 2010, Antalya, Turkey.
- Books and edited book chapters
- Patents
  - Έξυπνη μέθοδος και ολοκληρωμένη ηλεκτρονική διάταξη διαχείρισης πληροφοριών σε συστήματα εξασφάλισης εσωτερικής άνεσης με ταυτόχρονη ενεργειακή διαχείριση κτιρίων. (OBI2004010045).

## C – Awards & Distinctions

## D – Funded Projects

- Current projects:
  - BALKWASTE-Waste network for sustainable solid waste management planning and promotion of integrated decision tools in the Balkan region” . LIFE + funded. 1<sup>st</sup> January 2009- 31-12-2011. Project site : [www.balkwaste.eu](http://www.balkwaste.eu) .
  - LIFE FOREST CITIES - Local Authorities’ Alliance for Forest Fire Prevention LIFE+ funded.1<sup>st</sup> January 2010 until 31-12-2012. Project site: [www.forestcities.gr](http://www.forestcities.gr).

## E – Professional service

- Society Technical Committee duties
  - International Committee of Electrical Machines- ICEM
- Reviewing activities
  - Zentralblatt fur Mathematik und ihre Grenzgebiete (Mathematics Abstracts) edited by Springer-Verlag International publ.
  - Journal of Intelligent and Robotic Systems.

- IEEE Transactions on Energy Conversion.
- Participation in National Committees (e.g., EΔET) :
  - Committee of the Prefecture of Crete for the Energy Planning of Crete.

## **F – Service to the Department and the School**

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Tripolitakis Evangelos
    - Nikolaou Triantafylia
    - Sergaki Eleftheria
    - Afentakis Nikolaos
    - Vassalos Gerasimos
    - Dougali Evaggelia
    - Sytzanaki Athina
    - Gobakis Konstantinos
    - Panagiwtidou Natalia
    - Limneos Georgios
    - Ellinakis Epameinondas
  - PhD. And M.Sc. degrees awarded
    - Nikolaou Triantafylia
    - Vassalos Gerasimos
    - Ellinakis Epaminondas
    - Dougali Evagelia
- Undergraduate students supervised
  - Diploma theses in progress (supervisor): 15
  - Diploma theses completed (supervisor) : 9
  - Diploma theses in progress (committee member): 11
  - Diploma theses completed (committee member): 8

## **Telecommunications Division**

### **Faculty members**

- Bletsas Aggelos
- Digalakis Vassilios
- Zervakis Michail
- Karystinos George
- Koutsakis Polychronis
- Liavas Athanasios
- Paterakis Michail
- Potamianos Alexandros
- Sidiropoulos Nikolaos



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Aggelos Bletsas  
**Rank:** Assistant Professor  
**Years in rank:** 1 (one)  
**Full-time or part-time:** Full-time  
**Division:** Telecom  
**Lab affiliation:** Telecom Laboratory

### A – Teaching

- Undergraduate courses taught
  - TEL411 Computer Networks II (Spring 2010).
  - TEL404 Analysis and Design (Synthesis) of Telecom Modules (Spring 2010).
- Graduate courses taught
  - TEL603 Detection and Estimation Theory (Fall 2009).  
[23 2-hour lectures + 5 bi-weekly psets + midterm + final].
- Labs taught
  - TEL404 Analysis and Design (Synthesis) of Telecom Modules.
  - TEL411 Computer Networks II.
- Curriculum & course development
  - Low-cost hardware developed for TEL 404 Laboratory
  - New courses / labs developed  
TEL404 Analysis and Design (Synthesis) of Telecom Modules.
  - Lecture notes / slides developed  
TEL411 Computer Networks II.  
TEL404 Analysis and Design (Synthesis) of Telecom Modules.  
TEL603 Detection and Estimation Theory.

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    - **A. Bletsas**, A.G. Dimitriou and J.N. Sahalos, "Improving Backscatter Radio

Tag Efficiency", revised December 2009, *IEEE Transactions on Microwave Theory and Techniques* (MTT).

- **A. Bletsas**, A. Lippman and J.N. Sahalos, "Zero-Feedback, Collaborative Beamforming for Emergency Radio: Asymptotic Analysis", submitted to *Mobile Networks and Applications* (MONET), fast-tracked from IEEE ISWCS 09, selected one out of five best conference papers, February 2010. Revised August 2010.
- A.G. Dimitriou, **A. Bletsas** and J.N. Sahalos, "Improvements of UHF RFID Coverage with Commodity Hardware", submitted for publication, August 2010.
- Accepted:
  - **A. Bletsas**, A.G. Dimitriou and J.N. Sahalos, "Improving Backscatter Radio Tag Efficiency", *IEEE Transactions on Microwave Theory and Techniques* (MTT).
  - **A. Bletsas**, A. Lippman and J.N. Sahalos, "Simple, Zero-Feedback, Distributed Beamforming with Unsynchronized Carriers", *IEEE Journal on Selected Areas of Communication* (JSAC), *Special Issue on Simple Sensor Networking Solution*.
- Published:
  - **A. Bletsas**, S. Siachalou and J.N. Sahalos, "Anti-collision Backscatter Sensor Networks", *IEEE Transactions on Wireless Communications* (TWC), Vol. 8, No. 10, pp. 5018-5029, October 2009.
  - **A. Bletsas** and J.N. Sahalos, "Hirsch Index Rankings Require Scaling and Higher Moment", *Journal of the American Society for Information Science and Technology* (JASIST), Vol. 60, Issue 12, pp. 2577-2586, December 2009.
  - **A. Bletsas**, A.G. Dimitriou and J.N. Sahalos, "Interference-Limited Opportunistic Relaying with Reactive Sensing", *IEEE Transactions on Wireless Communications* (TWC), Vol. 9, Issue 1, pp. 14-20, January 2010.
  - **A. Bletsas**, A.G. Dimitriou and J.N. Sahalos, "Improving Backscatter Radio Tag Efficiency", *IEEE Transactions on Microwave Theory and Techniques* (MTT), Vol. 58, No. 6, pp. 1502-1509, June 2010.
- Publications in refereed conferences
  - Submitted: those published/appeared (see below)
    - **A. Bletsas**, A.G. Dimitriou and J.N. Sahalos, "Backscattering Improvement of UHF RFID Tag Efficiency", *IEEE IWAT 2010*, March 2010, Lisbon, Portugal.
    - A.G. Dimitriou, **A. Bletsas**, A.C. Polycarpou and J.N. Sahalos, "On Efficient UHF RFID Coverage Inside a Room", *IEEE EUCAP 2010*, April 2010, Barcelona, Spain.
    - A. G. Dimitriou, S. Siachalou, **A. Bletsas** and J. N. Sahalos, "An Efficient Propagation Model for Automatic Planning of Indoor Wireless Networks", *IEEE EUCAP 2010*, April 2010, Barcelona, Spain.

- G. Gregoriou, A. Polycarpou, A. Dimitriou, **A. Bletsas**, J. Sahalos, L. Papaloizou and P. Polycarpou, "Design and Implementation of a Radio Frequency Identification (RFID) System for Healthcare Applications", *MEDICON 2010*.
  - A. C. Polycarpou, G. Gregoriou, **A. Bletsas**, A. Dimitriou, J. Sahalos, "A UHF Radio Frequency Identification (RFID) System for Healthcare: Design and Implementation", *MobiHealth 2010*.
- Accepted:
- **A. Bletsas**, A.G. Dimitriou and J.N. Sahalos, "Backscattering Improvement of UHF RFID Tag Efficiency", *IEEE IWAT 2010*, March 2010, Lisbon, Portugal.
  - A.G. Dimitriou, **A. Bletsas**, A.C. Polycarpou and J.N. Sahalos, "On Efficient UHF RFID Coverage Inside a Room", *IEEE EUCAP 2010*, April 2010, Barcelona, Spain.
  - A. G. Dimitriou, S. Siachalou, **A. Bletsas** and J. N. Sahalos, "An Efficient Propagation Model for Automatic Planning of Indoor Wireless Networks", *IEEE EUCAP 2010*, April 2010, Barcelona, Spain.
  - G. Gregoriou, A. Polycarpou, A. Dimitriou, **A. Bletsas**, J. Sahalos, L. Papaloizou and P. Polycarpou, "Design and Implementation of a Radio Frequency Identification (RFID) System for Healthcare Applications", *MEDICON 2010*, May 2010, Chalkidiki.
  - A. C. Polycarpou, G. Gregoriou, **A. Bletsas**, A. Dimitriou, J. Sahalos, "A UHF Radio Frequency Identification (RFID) System for Healthcare: Design and Implementation", *MobiHealth 2010*, October 2010, Ayia Napa.
- Published:
- **A. Bletsas**, A. Lippman and J.N. Sahalos, "Simple, Zero-Feedback, Collaborative Beamforming for Emergency Radio", *IEEE International Symposium on Wireless Communication Systems (ISWCS)*, September 2009, Siena, Italy, to appear. **Selected as one of the five best papers.**
  - **A. Bletsas**, A.G. Dimitriou and J.N. Sahalos, "Backscattering Improvement of UHF RFID Tag Efficiency", *IEEE IWAT 2010*, March 2010, Lisbon, Portugal.
  - A.G. Dimitriou, **A. Bletsas**, A.C. Polycarpou and J.N. Sahalos, "On Efficient UHF RFID Coverage Inside a Room", *IEEE EUCAP 2010*, April 2010, Barcelona, Spain.
  - A. G. Dimitriou, S. Siachalou, **A. Bletsas** and J. N. Sahalos, "An Efficient Propagation Model for Automatic Planning of Indoor Wireless Networks", *IEEE EUCAP 2010*, April 2010, Barcelona, Spain.
  - G. Gregoriou, A. Polycarpou, A. Dimitriou, **A. Bletsas**, J. Sahalos, L. Papaloizou and P. Polycarpou, "Design and Implementation of a Radio Frequency Identification (RFID) System for Healthcare Applications",



- Patents:

Affidavit submitted to USPTO on winter 2010, for patent application Ser. No. 10/367,616 "Method and Apparatus for Direct Fabrication of Nanostructures", originally filed in 2/14/2003 through MIT.

## C – Awards & Distinctions

Conference paper "Simple, Zero-Feedback, Collaborative Beamforming for Emergency Radio", in IEEE International Symposium on Wireless Communication Systems (ISWCS), September 2009, Siena, Italy, was selected **as one of the five best conference papers**. Journal version was fast-tracked to *ACM/Springer Mobile Networks and Applications* (MONET).

## D – Funded Projects

- Current projects:
  - “RFID in Healthcare”, Cyprus Research Promotion Foundation.
- Project proposals submitted:
  - Three proposals submitted to GSRT in the context of “Thalis” program (program eventually postponed).
  - Two proposals submitted to GSRT in the context of “Cooperation” program, 1.5MEuro proposals, ICT section (program eventually funded only two (2) other proposals nationwide).
  - One FP7 proposal submitted (as PI).

## E – Professional service

- Conference Technical Program Committee service
  - IEEE Globecom 2010 – *Ad hoc and Sensor Networking Track*.
  - IEEE VTC 2010 – Fall, *Cognitive Radio and Cooperative Communication Track*.
  - IEEE VTC 2010 – Spring, *Cognitive Radio and Cooperative Communication Track*.
- Reviewing activities
  - Reviewed several papers for major IEEE Conferences and class A IEEE Transactions (e.g. reviews were provided for *IEEE Transactions on Wireless Communications*, *IEEE Transactions on Communications*, *IEEE Transactions on Information Theory* and *IEEE Transactions on Networking*).

## F – Service to the Department and the School

- Departmental responsibilities
  - Member of the team proposal which was submitted and eventually funded by TUC, regarding major teaching and research instrument infrastructure (“Major instruments

- 2009-2010” call by TUC).
  - Member of two undergraduate study committees that advised Department Chair on course material.
  - Departmental substitute member in TUC library committee.
- School-level responsibilities
  - Chairman of the selection committee regarding new furniture, for two TUC departments (ECE and Sciences). Selection process required assessment of 78 items from 6 different suppliers and absorbed (disproportionably) significant amount of time.

## **G – Advising**

- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Eleftherios Kampianakis, “Remotely Programmable Wireless Network for Research and Sensing Applications”.
    - John Kimionis, “Design and Implementation of Backscatter Radio for Sensor Networks with SDR”.
    - Manolis Alibertis, “Community RF Sensing”.
    - Konstadinos Tountas, “Networked GUI for RFID Infrastructure”.



## Annual Activity Report

*For the period: September 1, 2009 to August 31, 2010*

**Name:** Vassilis Digalakis

**Rank:** Full

**Years in rank:** 10

**Full-time or part-time:** Full-time

**Division:** Telecommunications

**Lab affiliation:** Information & Computer Networks Lab

### A – Teaching

- Undergraduate courses taught
  - Introduction to Speech Processing
  - Probabilities and Random Signals (with A. Potamianos)
- Graduate courses taught
  - Advanced topics in speech processing

### B – Publications

- Publications in refereed conferences
  - Published
    - P. Papadopoulos and **V. Digalakis**, “Identification of Linear Systems in Canonical Form through an EM Framework”, *ICASSP 2010*.

### C – Awards & Distinctions

### D – Funding

- Proposals submitted as Coordinator:
  - “Innovative integrated information system for medical appointments”, submitted to GSRT Cooperation call.
  - EPS-PHESTOC, “Development of an Environment for Processing and Studying of Pediatric HEart Sounds as a Screening TOol for heart disease in Children”, submitted to

Thales Call (Pending Decision).

- “Graphical Model Parameter Estimation Using Discriminative Methods,” submitted to ELKE (funded, budget 15K €).

## **E – Professional service**

- Reviewer in several journals.
- ICASSP Reviewer
- Interspeech Reviewer
- Eusipco Reviewer and TPC member

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Director, Information and Computer Networks Lab
  - Member, Undergraduate studies committee
- Director, Telecommunication Systems Institute of Crete (TSI)

Activities this year included:

- Internal Evaluation for TSI
- Adaptation of TSI to the new legal framework of Research Institutes
- TSI Proposal under the call “Research & Development Infrastructure”
- Submission of 24 research proposals by the department faculty members, out of which 13 were funded

## **G – Advising**

- Graduate students defended
  - Orfeas Tsergoulas, MSc - awarded 10/2009
  - Pavlos Papadopoulos, MSc - awarded 12/2009
- Active graduate students supervised
  - Dimitris Oikonomidis, PhD
- Undergraduate students supervised
  - Alexandros Georgogiannis
  - Michalis Tsinas
  - Kostas Spiliotis
  - Kostas Tsiakas
  - George Fragiadakis



## Annual Activity Report

*For the period: Sept 1, 2009 to Aug 31, 2010*

**Name:** Michalis Zervakis

**Rank:** Professor

**Years in rank:** 10

**Full-time or part-time:** Full-time

**Division:** Telecommunications

**Lab affiliation:** 1) Digital Image and Signal Processing Lab,  
2) Lab of Automation

### A – Teaching

- Undergraduate courses taught
  - Digital Signal Processing
  - Digital Image Processing
- Graduate courses taught
  - Pattern Recognition
- Labs taught
  - Digital Signal Processing
  - Digital Image Processing
- Curriculum & course development
  - New courses / labs developed:
  - Lecture notes / slides developed: Digital Image Processing, Digital Signal Processing, Pattern Recognition

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    - **M. Zervakis**, K. Michalopoulos, V. Iordanidou and V. Sakkalis, "Intertrial Coherence and Causal Interaction among Independent EEG Components", *Journal of Neuroscience Methods* (under second revision).
    - I.N. Dimou, I. Tsougos, E. Tsolaki, E. Kousi, E. Kapsalaki, K. Theodorou, M. Kounelakis and **M. Zervakis**, "Brain tumor classification using 3T MRS spectra and

- paired SVM kernels,” *IEEE Transactions on Information Technology in Biomedicine*, 2010 (Under second review)
- M. Kounelakis, I.N. Dimou, **M. Zervakis**, I. Tsougos, E. Tsolaki, E. Kousi, E. Kapsalaki, K. Theodorou, “Strengths and weaknesses of 1.5T and 3t MRS modalities in brain gliomas classification”, *IEEE Transactions on Information Technology in Biomedicine*, 2010 (Under second review)
  - Tsiliki G, **Zervakis M**, Ioannou M, Sanidas E, Stathopoulos E, Potamias G, Tsiknakis M, Kafetzopoulos D (2009) “Multi-platform Data Integration in Microarray Analysis. Submitted to *IEEE Transactions on Information Technology in Biomedicine* 2010 (Under second review).
  - A. Roniotis, V. Sakalis, K. Marias, I. Karatzanis and **M. Zervakis**, "In-depth analysis and evaluation of diffusive glioma models", *IEEE Trans. Inf. Tech.* (Under second review).
  - M. E. Blazadonakis, **M. Zervakis**, “Integrating Biological Knowledge for Marker Gene Selection in Breast Cancer,” *Artificial Intelligence in Medicine*, Elsevier, submitted for publication March 2010.
  - G. Livanos, **M. Zervakis**, G.C. Giakos, K. Valluru, S. Paturi, and S. Marotta "Modeling the characteristics of material distributions in polarimetric images" UNDER REVIEW for *IET Image Processing*, submitted Feb. 2010.
  - Ioannis N. Dimou, **Michalis E. Zervakis** “Generalized Space Support Vector Machines,” *Journal of Machine Learning Research*, submitted 10/9/2010.
  - M.G. Kounelakis, **M.E. Zervakis**, G. C. Giakos, G. J. Postma, L. M. C. Buydens and Xenofon Kotsiakos, “Embedding filtering criteria into a wrapper marker selection method for brain tumors classification: An application on metabolic peak area ratios,” *IEEE Transactions on Instrumentation & Measurements*, 2010 (Under submission).
- Accepted:
    - M. E. Blazadonakis, **M. Zervakis**, D. Kafetzopoulos, “Gene Signature Integration in Multipatform Microarray Experiments”. *IEEE transactions on Information Technology in Biomedicine*, accepted July 2010, to appear.
  - Published
    - Ardoino I., Ambrogi F., Iacobelli S., Boracchi P., Manikis G., Kounelakis M.G., **Zervakis M.**, Lisboa P.J.G., Fazi P., Vignetti M., Biganzoli E.M. and Starita A., “Evaluation of short- and long-term response to treatment in GIMEMA protocol for Acute Myeloid Leukaemia,” *Int. J. of Biomedical Engineering & Technology*, vol. 3, pp. 329-348, 2010.
    - Ioannis N. Dimou, **Michalis E. Zervakis** “Error bounds of decision templates and support vector machines in decision fusion,” *Int. J. of Knowledge Engineering and Soft Data Paradigms*, published 1/10/2009.
    - Sfakianakis, S., Blazantonakis, M., Dimou, I., **Zervakis, M.**, Tsiknakis, M., Potamias, G., Kafetzopoulos, D., and Lowe, D. (2010): "Decision support based on genomics: integration of data-and knowledge-driven reasoning." *International Journal of Biomedical Engineering and Technology*, 3(3), 287--307. Inderscience (1/4/2010).
    - G C Giakos, K Valluru, V Adya, K Ambadipudi, S Paturi, P Bathini, M Becker, P Farajipour, S Marotta, J Paxitzis, B Mandadi, **M Zervakis** and G Livanos "Stokes parameter imaging of multi-index of refraction biological phantoms utilizing optically active molecular contrast agents", *Meas. Sci. Technol.* 20 (2009) <http://stacks.iop.org/MST/20/104003>
    - Giakos G. C. , Paturi S. A. , Valluru K., Bathini P., Adya V., Sukumar S., Ambadipudi K., Mandadi B., Becker M., Athawale, S., Farajipour P. , Marotta S.,

- Sheffer D., Livanos G., **Zervakis M.** "Efficient Molecular Imaging Techniques Using Optically Active Molecules", *Instrumentation and Measurement, IEEE Transactions*, accepted 23/9/2010
- V. Sakkalis, T. Cassar, **M. Zervakis**, C. D. Giurcăneanu, C. Bigan, S. Micheloyannis, K. P. Camilleri, S. G. Fabri, V. Tsiaras, E. Karakonstantaki and K. Michalopoulos, "A Decision Support Framework for the Diagnosis of Children with Mild Epilepsy based on EEG Analysis", *Journal of Neuroengineering and Rehabilitation*, Vol. 7, No. 24, 2010 (available online: DOI: 10.1186/1743-0003-7-24).
  - Roniotis, K. Marias, V. Sakkalis and **M. Zervakis**, "Diffusive Modelling of Glioma Evolution: A review", *Journal of Biomedical Science and Engineering*, Scientific Research Publishing, Vol. 3, No. 5, pp. 501-508, 2010 (available online: DOI: 10.4236/jbise.2010.35070).
- Publications in refereed conferences
    - Submitted: those published/appeared (see below)
    - Published:
      - M. E. Blazadonakis, M. E. Zervakis and D. Kafetzopoulos, "A Proposal for Gene Signature Integration", in Proceedings of the IEEE 9<sup>th</sup> International Conference on Information Technology and Applications in Biomedicine, (ITAB 2009) Larnaca Cyprus, 2009.
      - Tsiliki G, Zervakis M, Ioannou M, Sanidas E, Stathopoulos E, Potamias G, Tsiknakis M, Kafetzopoulos D (2009), Multi-platform data integration in Microarray Analysis, 9th International Conference of Information Technology & Applications in Biomedicine (ITAB 2009), Larnaca Cyprus 2009.
      - A. Roniotis, K. Marias, V. Sakkalis, I. Karatzanis, and M. Zervakis " The mathematical path to develop a heterogeneous, anisotropic and 3-dimensional glioma model using Finite Differences", Information Technology Applications in Biomedicine (IEEE-ITAB 2009), Larnaca, Cyprus, 2009
      - I. Dimou, I. Tsougos, E. Tsolaki, K. Theodorou and M. Zervakis, "Classification of 3T MRS spectra using Support Vector Machines", 9th International Conference on Information Technology and Applications in Biomedicine (ITAB 2009), Larnaca, Cyprus, Nov. 4-7, 2009.
      - M.G. Kounelakis, M.E. Zervakis, G.J. Postma, L.M.C. Buydens, A. Heerschap and X. Kotsiakis, Validation of MRS metabolic markers in the classification of brain gliomas and their correlation to energy metabolism, 12<sup>th</sup> Mediterranean Conference on Medical and Biological Engineering and Computing (MEDICON), Chalkidiki, 27-30 May 2010 (**Published**)
      - M.G. Kounelakis, M.E. Zervakis, G.C. Giakos, C. Narayan, S. Marotta, D. Natarajamani, G.J. Postma, L.M.C. Buydens and X. Kotsiakis, Targeting brain gliomas energy metabolism for classification purposes, The 2010 IEEE International Conference on Imaging Systems and Techniques (IST), Thessaloniki, 1-2 July 2010
      - G.C. Giakos, S. Marotta, K. Ambadipudi, K. Valluru, J. Petermann, C. Narayan, D. Natarajamani, D. Pingili, M.G. Kounelakis, G. Livanos and M.E. Zervakis, Backscattered polarimetric detection from biological tissue, The 2010 IEEE International Conference on Imaging Systems and Techniques (IST), Thessaloniki, 1-2 July 2010
      - A. Roniotis, K. Marias, V. Sakkalis, G. Stamatakis, and M. Zervakis, "Comparing Finite Element and Finite Difference Techniques as Applied to the Development of Diffusive Models of Glioblastoma Multiforme Growth", 32nd IEEE-EMBS, Engineering in Medicine and Biology Society (EMBC 2010), Buenos Aires, Argentina, August 31-September 4, 2010.
      - V. Sakkalis, V. Tsiaras, M. Zervakis, and I. Tollis, "EEG Biomarker identification

using Graph Theoretic concepts", International Conference on Biomedical Data & Knowledge Mining: Towards Biomarker Discovery, Chania, Greece, July 7-9, 2010.

- Roniotis, V. Sakkalis, G. Stamatakis, M. Zervakis, and K. Marias, "Glioma diffusive modeling: Calculating diffusion coefficients from atlases with proportional tissue information", 4th International Advanced Research Workshop on In Silico Oncology and Cancer Investigation, Athens, Greece, September 8-9, 2010.
- Ioannis N. Dimou and Michalis E. Zervakis A Generalized-Space Expansion of Support Vector Machines for diagnostic systems. ITAB 2010 accepted 15/7/2010
- Sfakianakis, S., Zervakis, M., Tsiknakis, and Kafetzopoulos, D.: "Integration of Biological Knowledge in the Mixture-of-Gaussians Analysis of Genomic Clustering" accepted in the 10th IEEE International Conference on Information Technology and Applications in Biomedicine (ITAB 2010)
- C. Farmaki, K. Mavrigiannakis, K. Marias, M. Zervakis, and V. Sakkalis "Assessment of Automated Brain Structures Segmentation based on the Mean-shift Algorithm Application in Brain Tumor", Information Technology Applications in Biomedicine (IEEE-ITAB 2010), Corfu, Greece, November 3-5, 2010.

- Books and edited book chapters

- Georgios C. Manikis, Michail G. Kounelakis, Michail E. Zervakis Pattern Recognition Methods for AML-Induction- Treatment Analysis, Frontiers in Artificial Intelligence and Applications, F. Masulli, A. Micheli & A. Sperduti (eds) – IOS Press, pp. 69-80, July 2009
- V. Sakkalis and M. Zervakis, "Methodological Framework for EEG Feature Selection based on spectral and temporal profiles", Computational Neuroscience, Springer Optimization and Its Applications series, Vol. 38, Ed. by Chaovalitwongse Wanpracha et al., ISBN: 978-0-387-88629-9, Springer New York/Vienna, 2010.
- V. Sakkalis and M. Zervakis, "Linear and Nonlinear Synchronization Analysis and Visualization during Altered States of Consciousness", Recent Advances in Biomedical Engineering, Ed. by Ganesh R Naik, ISBN 978-953-307-004-9, IN-TECH, Vienna (<http://sciyo.com/articles/show/title/linear-and-nonlinear-synchronization-analysis-and-visualization-during-altered-states-of-consciousne>), 2010.

- Patents: none

## C – Awards & Distinctions

## D – Funded Projects

- TEMPUS IV project tilted Curricula Reformation & Harmonisation in the Field of Biomedical Engineering (CRH-BME Tempus Project N° 144537-TEMPUS-2008-GR-JPCR, 2009-2012.
- In Negotiations **ICT-2009.5.2** ICT for Patient Safety, Title: **Real Time Simulation for Safer vascular Stenting (RT3S)**, Grant Agreement no. : 248801
- In Negotiations **GSRT Cooperation Programme**, Title: **OncoSeed Diagnostics: Biology of Circulating Tumour Cells, Distant Metastasis & Development of Liquid Biopsy Methods**
- In Negotiations **GSRT Cooperation Programme**, Title: **Οστεοαρθρίτιδα: ολοκληρωμένη Συστηματική ανάλυση για στοχευμένη βιολογική θεραπεία**



Project proposals submitted:

- During the Calls of ICT and Health participated in the submission of four STREPs;

## **E – Professional service**

- Associate Editor duties
- Society Technical Committee duties
  - Session Chair ITAB 2009, IST-10 (International Conference on Imaging Science and technologies) and MEDICON 2010
  - International Programme Committee for ITAB 2009, IST 2010
- Conference Technical Program Committee service
- Conference Organization (specify role)
- Reviewing activities:
  1. Reviewer for “IEEE Transactions on Image Processing”, “Image and Vision Computing”, “Pattern Recognition”, “Journal of Visual Communication and Image Representation”, and many conferences in his fields of expertise.
- Participation in National Committees (e.g., EΔET)
- Other
  - External reviewer for two PhD thesis from University of Thrace, one from University of Crete, one from NTUA

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Lab Director: Digital Image and Signal Processing Laboratory
  - Lab Director: Automation Laboratory
- School-level responsibilities
  - Member and vice-chair ELKE

## **G – Advising**

- Completed PhDs
- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Ioannis Dimou, PhD student
    - Michalis Kounelakis, PhD student
    - George Manikis, PhD student
    - Alexandros Roniotis, PhD Student
    - Kostantina Moirogiorgou, MASc student
    - George Livanos, MASc student
    - Kostas Michalopoulos, MASc student
- 1. PhD. And M.Sc. degrees awarded
  1. Vanessa Margariti



## Annual Activity Report

*For the period: Sept. 1, 2009 to Aug. 31, 2010*

**Name:** George Karystinos  
**Rank:** Assistant Professor  
**Years in rank:** 4  
**Full-time or part-time:** Full-time  
**Division:** Telecommunications  
**Lab affiliation:** Telecommunications Laboratory

### A – Teaching

- Undergraduate courses taught
  - TEL 201 – Signals and Systems (Fall 2009)
  - TEL 412 – Information Theory and Coding (Spring 2010)
- Graduate courses taught
  - TEL 611 – Coding Theory (Spring 2010)
- Labs taught
  - TEL 201 – Signals and Systems Lab (Fall 2009)
- Curriculum & course development
  - New courses / labs developed
  - Lecture notes / slides developed
  - Authored textbooks

### B – Publications

- Publications in refereed journals
  - Submitted
    - M. Gkizeli and **G. N. Karystinos**, “Noncoherent block amplify-and-forward relaying,” *IEEE Transactions on Communications*, submitted Sept. 2009.
  - Accepted
  - Published
    - D. S. Papailiopoulos and **G. N. Karystinos**, “Maximum-likelihood noncoherent OSTBC detection with polynomial complexity,” *IEEE Transactions on Wireless Communications*, vol. 9, pp. 1935-1945, June 2010.
    - **G. N. Karystinos** and A. P. Liavas, “Efficient computation of the binary

vector that maximizes a rank-deficient quadratic form,” *IEEE Transactions on Information Theory*, vol. 56, pp. 3581-3593, July 2010.

- Publications in refereed conferences
  - Submitted: those accepted (see below), plus
    - K. R. Dalbey and **G. N. Karystinos**, “Fast generation of low discrepancy spacefilling Latin hypercube sample designs,” *SEM IMAC XXIX Conference*, submitted Aug. 2010.
  - Accepted:
    - K. R. Dalbey and **G. N. Karystinos**, “Fast generation of space-filling Latin hypercube sample designs,” to appear in *Proc. 13th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, Fort Worth, TX, Sept. 2010, accepted May 2010.
  - Published
    - D. S. Papailiopoulos and **G. N. Karystinos**, “Optimal OSTBC sequence detection over unknown correlated fading channels,” in *Proc. 2009 Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2009, pp. 1441-1445.
- Books and edited book chapters
- Patents

## C – Awards & Distinctions

## D – Funded Projects

- Current projects
  - Participated in FP6 FET project “CoopCom,” led by Prof. A. P. Liavas.
- Project proposals submitted
  - “DISCO - Distributed wireless communications,” submitted to the Ministry of National Education and Religious Affairs of Greece, Thales Program, Feb. 2010.
  - “sWiNcom - Secure wireless nonlinear communications at the physical layer,” submitted to the Ministry of National Education and Religious Affairs of Greece, Thales Program, Feb. 2010.
  - “Development of RF/RFID systems for control of products and persons,” submitted to the Ministry of National Education and Religious Affairs of Greece, Thales Program, Feb. 2010.

## E – Professional service

- Associate Editor duties
- Society Technical Committee duties
- Conference Technical Program Committee service
  - IEEE International Symposium on Wireless Communication Systems (ISWCS) 2010.

- IEEE International Conference on Communications (ICC) 2010 - Wireless Communications Symposium.
- Conference Organization (specify role)
- Reviewing activities
  - Reviewer for journals
  - *IEEE Transactions on Information Theory*
  - *IEEE Transactions on Communications*
  - *IEEE Transactions on Wireless Communications*
  - *IEEE Transactions on Signal Processing*
    - Reviewer for conferences
      - IEEE GLOBECOM 2010*
      - IEEE VTC 2010 (Fall)*
      - IEEE ISIT 2010*
      - IEEE ICC 2010*
    - Reviewer for books

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Organized the 2009-2010 Telecommunications Division Seminar Series, Department of ECE, Technical University of Crete.
  - Member of the Graduate Studies Committee, Department of ECE, Technical University of Crete, Sept. 2009 - Aug. 2010.
- School-level responsibilities

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Dimitris Koupatsiaris, “Efficient techniques for channel decoding,” Ph.D. student.
    - Georgina Abou-Elkheir, “Finite-feedback beamforming under uniform transmit antenna power requirements with polynomial complexity,” M.Sc. student.
  - Ph.D. and M.Sc. degrees awarded
    - Anastasios Kyrillidis, “Polynomial-complexity computation of the M-phase vector that maximizes a rank-deficient quadratic form,” M.Sc., awarded Aug. 2010.
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Panayiotis Markopoulos, “Maximum-likelihood noncoherent OSTBC MPSK detection.”
    - Alexandros Sklikas, “An algorithm with complexity  $O(N^3 \log N)$  for rank-4 quadratic form maximization with a binary vector.”
    - Nikos Tsagkarakis, “Design and decoding of polar codes.”
  - Diploma theses completed (supervisor)

- Megasthenis Asteris, “Sparse rank-deficient variance maximization,” awarded July 2010.
- Nikolaos Kolomvakis, “Zero-error varying-length distributed source coding,” awarded July 2010.
- Anastasia Barkalaki, “Rank-deficient quadratic form maximization with a binary vector: Parallelization and implementation in C,” awarded Nov. 2009.



**Technical University of Crete**  
**Department of Electronic & Computer Engineering**

## **Annual Activity Report**

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Polychronis Koutsakis

**Rank:** Assistant Professor (tenured track)

**Years in rank:** 1.5 (in TUC), 4 (in total, McMaster+TUC)

**Full-time or part-time:** Full-time

**Division:** Telecommunications

**Lab affiliation:** Information & Networks Laboratory

### **A – Teaching**

- Undergraduate courses taught
  - Computer Networks I
  - Introduction to Modeling and Performance Evaluation of Communication Networks
- Graduate courses taught
  - Communication Network Protocols
- Labs taught
- Curriculum & course development
- New courses / labs developed
- Lecture notes / slides developed : Slides for both undergraduate courses that I taught
- Authored textbooks

### **B – Publications**

Publications in refereed journals

- **Submitted: those published/appeared (see below)**
  - **P. Koutsakis**, “Using Traffic Prediction and Estimation of Provider Revenue for a Joint GEO Satellite MAC/CAC Scheme”, revised for publication in the ACM Wireless Networks Journal.
  - L. Qiao and **P. Koutsakis**, “Adaptive Bandwidth Reservation and Scheduling for Efficient

Wireless Telemedicine Traffic Transmission”, submitted to the IEEE Transactions on Vehicular Technology.

- **Accepted:**

- A. Lazaris and **P. Koutsakis**, “Modeling Multiplexed Traffic from H.264/AVC Videoconference Streams”, Computer Communications Journal, Elsevier Publ.

- **Published:**

- **P. Koutsakis**, “Dynamic vs. Static Traffic Policing: A New Approach for Videoconference Traffic over Wireless Cellular Networks”, IEEE Transactions on Mobile Computing, Vol. 8, No. 9, 2009, pp. 1153-1166.
- A. Lazaris and **P. Koutsakis**, “Pricing-Based Call Admission Control for Wireless MPEG-4 Traffic”, Computer Communications Journal, Elsevier Publ., Vol. 32, No. 17, 2009, pp. 1781-1789.
- **P. Koutsakis**, M. Vafiadis and A. Lazaris, “A New Bandwidth Allocation Mechanism for Next Generation Wireless Cellular Networks”, ACM Wireless Networks Journal, Vol. 16, No. 2, 2010, pp. 331-353.
- A. M. Kholaf, T. D. Todd, **P. Koutsakis** and A. Lazaris, “Energy Efficient H.263 Video Transmission in Power Saving Wireless LAN Infrastructure”, IEEE Transactions on Multimedia, Vol. 12, No. 2, 2010, pp. 142-153.

- Publications in refereed conferences

- Submitted: those published/appeared (see below)

- Accepted:

- Published:

- **P. Koutsakis**, “Call Admission Control for Wireless Videoconference Traffic Based on the Users’ Willingness to Pay”, in Proc. of the European Wireless 2010 Conference, Lucca, Italy, April 2010, pp. 34-41 (*IEEE Communications Society Conference*).

- Books and edited book chapters

- Patents

A. M. Kholaf, T. D. Todd, **P. Koutsakis** and M. N. Smadi, “Wireless Access Point Methods And Apparatus Using Dynamically-Activated Service Intervals”, U.S (ID number: 34754) and Canadian patent submitted, by Research In Motion (RIM).

## C – Awards & Distinctions

## D – Funded Projects

Current projects:

January 2010- December 2010, Principal Investigator, Research grant from the Technical University of Crete: “Traffic control and resource allocation for wireless cellular networks”, 5000 € total funding.

March 2009-February 2012, Member of the Research Group of 15 university professors from 4 Canadian universities (University of Ottawa, University of Waterloo, McMaster University, Queen’s University) who wrote the research proposal titled: “WiSense: Wireless Heterogeneous Sensor Networks in the e-Society”. This research is being funded by the Ontario Research Fund Research Excellence (*ORF-RE*) and by the industry. Total budget: \$9223800, ORF funding: \$3074600. Industrial partners: Bell Canada, Alcatel-Lucent, IBM,

RIM (Research in Motion), Freescale Semiconductor, PacketDNA, Wireless Network Design & EMC Services.

Project proposals submitted:

## **E – Professional service**

- Associate Editor duties
  - Computer Communications Journal (Elsevier)
  - the International Journal on Advances in Networks and Services, published by IARIA (International Academy, Research and Industry Association).
  - the International Journal on Advances in Telecommunications (published by IARIA).
  - the Journal of Convergence (published by FTTRA)
- Society Technical Committee duties
  - Voting Member of the IEEE Multimedia Communications Technical Committee (MMTC)
- Conference Technical Program Committee service
  - 12<sup>th</sup> Communications and Networking Simulation Symposium (CNS'09)
  - 10<sup>th</sup> ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD) 2009
  - 4<sup>th</sup> International Conference on Pervasive Computing and Applications (ICPCA 09)
  - 2<sup>nd</sup> IEEE Workshop on Mobile Video Delivery (MoViD 2009, in conjunction with IEEE Infocom 2009)
  - 18<sup>th</sup> IEEE International Conference on Computer Communication and Networks (ICCCN) 2009 – Network Algorithms and Performance Evaluation Track
  - Workshop on Advanced Wireless Broadband Networks (AWBN) 2009 (in conjunction with MobiQuitous'09)
  - 4<sup>th</sup> International Conference on Access Networks (AccessNets 2009)
  - IEEE Conference on Local Computer Networks (LCN) 2009
  - 2<sup>nd</sup> International Conference on Computer Science and its Applications (CSA 2009)
  - 7<sup>th</sup> ACIS International Conference on Software Engineering Research, Management and Applications (SERA 2009)
  - 1<sup>st</sup> International Conference on Creative Content Technologies (CONTENT 2009)
  - IEEE GLOBECOM 2009 Symposium on Wireless Communications
  - IEEE CCNC 2010 – Short Papers Session
  - 9<sup>th</sup> International Conference on Networks (ICN 2010)
  - 25<sup>th</sup> Queen's Biennial Symposium on Communications (QBSC 2010)
  - 5<sup>th</sup> Annual International Wireless Internet Conference (WICON 2010)
  - 8<sup>th</sup> IEEE International Conference on Pervasive Computing and Communications (PerCom) 2010
  - IEEE ICC 2010 Wireless and Mobile Networking Symposium
- Conference Organization (specify role)
- Reviewing activities
  - IEEE Transactions on Mobile Computing
  - IEEE Transactions on Broadcasting
  - IEEE Transactions on Circuits and Systems for Video Technology
  - ACM Wireless Networks Journal



Performance Evaluation Journal (Elsevier Science Publisher)  
Wireless Personal Communications Journal (Springer Publ.)  
Computer Networks Journal (Elsevier Science Publisher)  
Journal of Network and Computer Applications (Elsevier Publ.)  
Simulation Modelling Practice and Theory (Elsevier Publ.)  
EURASIP Journal on Wireless Communications and Networking (Hindawi Publ.)  
International Journal of Communication Systems (Wiley Publ.)

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Substitute Member of the undergraduate studies committee
- School-level responsibilities

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    -
  - PhD. And M.Sc. degrees awarded
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Ioannis Sotiropoulos, “Call Admission Control for Multimedia Traffic Transmission over Wireless Cellular Networks”

Diploma theses completed (supervisor)



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Athanasios P. Liavas

**Rank:** Professor

**Years in rank:** 1

**Full-time or part-time:** Full-time

**Division:** Telecommunications Division

**Lab affiliation:** Telecommunications Lab

### A – Teaching

- Undergraduate courses taught
  - Wireless Communications
  - Telecommunications Systems II
- Labs taught
  - Wireless Communications
  - Telecommunications Systems II
- Curriculum & course development
  - Lecture notes / slides developed: Notes “Telecommunications Systems II”

### B – Publications

- Publications in refereed journals
  - Submitted: those published/appeared (see below)
    - **A. P. Liavas** and D. Tsipouridou, “On the training sequence design for joint channel and CFO estimation in frequency-selective single-carrier systems with MMSE linear equalizers,” submitted to the *IEEE Trans. on Signal Processing*, July 2010.
  - Published:
    - D. Tsipouridou and **A. P. Liavas**, “On the sensitivity of the MIMO Tomlinson-Harashima precoder with respect to channel uncertainties,” *IEEE Trans. on Signal Processing*, vol. 58, no.4, pp. 2261-2272, April 2010
    - G. N. Karystinos, and **A. P. Liavas**, “Efficient Computation of the Binary Vector that Maximizes a Rank-deficient Quadratic Form,” *IEEE Trans. on Information Theory*, vol. 56, pp. 3581-3593, July 2010.

## **C – Awards & Distinctions**

## **D – Funded Projects**

## **E – Professional service**

- Society Technical Committee duties
  - *IEEE Signal Processing for Communications and Networking* Technical Committee.
- Conference Technical Program Committee service
  - *SPAWC 2010*.
- Reviewing activities
  - *IEEE Trans. Signal Processing, ICASSP 2010, SPAWC 2010*.

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Department Chair
- School-level responsibilities
  - Senate Member

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - E. Matigakis (2009--)
    - A. Balatsoukas-Stimming (2010--)
  - Ph.D. And M.Sc. degrees awarded
    - D. Tsipouridou PhD (2006-2010)
    - I. Kardaras, M.Sc (2008-2010)
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Matzakos Panagiotis
    - Alexiou Evaggelos
    - Georgiadou Despoina
  - Diploma theses completed (supervisor)
    - Fidanis Ioannis
    - Sklivanitis Georgios
    - Alexios Balatsoukas-Stimming



## Annual Activity Report

*For the period: September 1, 2009 to August 31, 2010*

**Name:** Michael Paterakis

**Rank:** Professor

**Years in rank:** 11

**Full-time or part-time:** Full-time

**Division:** Telecommunications

**Lab affiliation:** Information and Computer Networks Laboratory

### A – Teaching

Exemption, due to University administrative duties (University Vice-Rector responsible for Academic Affairs and Personnel).

### D – Funded Projects

- Current projects:

“Provision of Support Services for the Activation and Parameterization of the Broadband Fiber Optic based Metropolitan Area Network of Chania”. Funded for the period 1/01/2010 – 30/06/2010 by the Municipality of Chania. PI: Prof. M. Paterakis. Budget: 50.000 €.

“Quality Assurance Unit for Higher Education of the Technical University of Crete” Funded for the period 17/08/2010 – 31/07/2013 by the Education and Lifelong Learning Project of the 2007 – 2013 National Strategic Framework Program for Greece (ESPA), PI: Prof. M. Paterakis, Budget: 241.927 €.

### E – Professional service

- *April 2004 – April 2007 and April 2007 – April 2010:* Member of the Executive Board, Greek Universities Network (GUnet), a not for profit company founded by all the Greek Academic Institutions.

## **F – Service to the Department and the School**

- School-level responsibilities
  - September 2005 – December 2010, Vice-Rector of Academic Affairs and Personnel, Technical University of Crete.
  - Member of the University Senate, 2005 – 2010, (University Vice-Rector)
  - Associate Chairman of the Board, Company for the Management and Exploitation of the Property and for the Development, Management and Exploitation of the Technology Park of the Technical University of Crete.
  - Member of the Board, Telecommunication Systems Research Institute (T.S.I.), Technical University of Crete.



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Alexandros Potamianos

**Rank:** Associate Professor

**Years in rank:** 7+1/2

**Full-time or part-time:** Full-time

**Division:** Telecommunications

**Lab affiliation:** Speech and Dialogue Group

### A – Teaching

- Undergraduate courses taught
  - TEL 313 – Audio and Music Processing
  - TEL 303 – Statistical Modeling and Pattern Recognition
  - TEL 211 – Probability and Random Processes (with V. Digalakis)

- Graduate courses taught

#### J. Curriculum & course development

1. Course material for the new course TEL 313
  1. Notes
  2. Presentations
  3. Handouts
  4. Labs
  5. Projects

### B – Publications

- Publications in refereed journals
  - Submitted
    - P. Tsiakoulis, and **A. Potamianos**, "Analysis of English Vowels and Diphthongs using an AM-FM model: Estimation of Amplitude and Frequency Modulations in Speech Resonances," *Journal of the Acoustical Society of America*, submitted, May 2010.

- Accepted
  - E. Iosif, and **A. Potamianos**, "Unsupervised Semantic Similarity Computation Between Terms Using Web Documents," *IEEE Transactions on Knowledge and Data Engineering*, vol. 22, no. 11, pp. 1637-1647, Nov. 2010
  - S. Yildirim, S. Narayanan, and **A. Potamianos**, "Detecting Emotional State of a Child in a Conversational Computer Game," *Computer, Speech and Language*, vol. 25, no. 1, pp. 29-44, Jan. 2011.
  - D. Dimitriadis, P. Maragos, and A. Potamianos, " On the Effects of Filterbank Design and Energy Computation on Robust Speech Recognition ," *IEEE Transactions on Audio, Speech and Language Processing*, to appear, 2011.
- Published
  - P. Tsiakoulis, **A. Potamianos**, and D. Dimitriadis, "Spectral Moment Features Augmented by Low Order Cepstral Coefficients for Robust ASR," *IEEE Signal Processing Letters*, vol. 17, no. 6, pp. 551-554, June 2010.
  - D. Nion, K. Mokios, N. Sidiropoulos, **A. Potamianos**, "Batch and Adaptive PARAFAC-Based Blind Separation of Convolutional Speech Mixtures," *IEEE Transactions on Audio, Speech and Language Processing*, vol. 18, no. 6, pp. 1193 - 1207, Aug. 2010.
- Publications in refereed conferences
  - Submitted/Accepted/Published:
    - T. Kannetis, and **A. Potamianos**, "Towards Adapting Fantasy, Curiosity and Challenge in Multimodal Dialogue Systems for Preschoolers," in *Proc. Int'l Conf. on Multimodal Interfaces (ICMI-2009)*, Boston, MA, Nov. 2009.
    - T. Kannetis, **A. Potamianos**, and G.N. Yannakakis "Fantasy, Curiosity and Challenge as Adaptation Indicators in Multimodal Dialog Systems for Preschoolers," in *Proc. Workshop of Child, Computer and Interaction (WOCCI-2009)*, Boston, MA, Nov. 2009.
    - M. Gerosa, D. Giuliani, S. Narayanan, and **A. Potamianos**, "A Review of ASR Technologies for Children's Speech," in *Proc. Workshop of Child, Computer and Interaction (WOCCI-2009)*, Boston, MA, Nov. 2009.
    - S. Dimopoulos, C.H. Lee, E. Fosler-Lussier, and **A. Potamianos**, "Transition features for CRF-based recognition and boundary detection," in *Proc. Automatic Speech Recogn. and Underst. Workshop (ASRU-2009)*, Merano, Italy, Dec. 2009.
    - P. Tsiakoulis, **A. Potamianos**, and D. Dimitriadis, "Short-time instantaneous frequency and bandwidth features for speech recognition," in *Proc. Automatic Speech Recogn. and Underst. Workshop (ASRU-2009)*, Merano, Italy, Dec. 2009.
  - Submitted/Accepted:
    - P. Tsiakoulis, and **A. Potamianos**, "On the Effect of Fundamental Frequency on Amplitude and Frequency Modulation Patterns in Speech Resonances," in *Proc. Interspeech*, Makuhari, Japan, Sept. 2010.

## C – Awards & Distinctions

- Elevated to Senior Member IEEE

## D – Funded Projects

- Current projects (Principal Investigator):
  - ELKE Basic Research Project, "Unsupervised discovery of semantic relations", 2010-2011 PI: **A. Potamianos**, Funding level: 15K €.
- Current projects (collaborator):
  - "Dicta-Sign: Sign Language Recognition, Generation and Modeling with Application in Deaf Communication" FP7-STREP, NTUA PI: P. Maragos, 2009 - 2011
- Project proposals submitted:
  - BabyExp, "Acquiring Commonsense Knowledge Like Children Do", EU-IST FP7
  - CogniCine, "Multimodal cognitive and computational models for attention and saliency dynamics", EU-IST FP7

## E – Professional service

- Editorial Board
  - Computer Speech and Language
  - Journal on Multimodal User Interfaces
- Member of the IEEE Speech Technical Committee
- Reviewing activities
  - Reviewer for *IEEE Trans. on Audio, Speech and Language Processing*, *IEEE Signal Proc. Letters*, *Speech Processing*, *ACM Trans. on Speech and Language Processing*

## F – Service to the Department and the School

- School-level responsibilities
  - Alternate representative of Dept. of ECE to ELKE



## G – Advising

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Manolis Perakakis (Ph.D.), 2004-
    - Ilias Iosif (Ph.D.), 2007-
    - Ioannis Klasinas (Ph.D.) (co-supervised with Dr. Daoudi), IRIT-France, 2008-
    - Theodosis Moschopoulos (M.Sc.), 2008-
    - Nikos Malandrakis (M.Sc.), 2008-
    - Maria Giannoudaki (M.Sc.), 2008-
    - Valia Kouloumenta (M.Sc.), 2010-
  - Ph.D. degrees awarded
    - Pirros Tsiakoulis (Ph.D.) (co-supervised with Prof. Karagiannis), Natl. Tech. Univ. of Athens, 2010
  - M.Sc. degrees awarded
    - Spyros Dimopoulos (M.Sc.), 2010
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Giorgos Evgeniadis
    - Nikos Xirouchakis
    - Stamatis Kourpas
  - Diploma theses completed (supervisor)
    - Vasiliki Kouloumenta
    - Afroditi Maragouli
    - Fani Tsapeli
    - Panagiotis Kerammidas
    - Stylianos Mammias



## Annual Activity Report

*For the period: Sep. 1, 2009 to Aug. 31, 2010*

**Name:** Nikos Sidiropoulos

**Rank:** Professor

**Years in rank:** 8+1/2

**Full-time or part-time:** Full-time

**Division:** Telecommunications

**Lab affiliation:** Telecommunications Laboratory

### A – Teaching

- Undergraduate courses taught
  - Telecommunication Systems I (Fall 2009)
  - Statistical Signal Processing for Communications (Spring 2010)
- Graduate courses taught
  - Convex Optimization (Spring 2010)
  - Labs taught
    - TEL 301 – Telecommunication Systems I Lab (Fall 2009)
  - Curriculum & course development
    1. New courses / labs developed
    2. Lecture notes / slides developed
    3. Authored textbooks

### B – Publications

- Publications in refereed journals
  - Submitted
    - I. Mitliagkas, **N.D. Sidiropoulos**, and A. Swami, “Joint Power and Admission Control for Ad-hoc and Cognitive Underlay Networks: Convex Approximation and Distributed Implementation”, submitted to *IEEE Trans. on Wireless Communications*.
    - D. Nion, **N.D. Sidiropoulos**, “Tensor Algebra and Multi-dimensional Harmonic Retrieval in Signal Processing for MIMO Radar”, *IEEE Trans. on Signal Processing*, to appear.
    - D. Angelosante, G.B. Giannakis, and **N.D. Sidiropoulos**, “Estimating Multiple Frequency-Hopping Signal Parameters via Sparse Linear

Regression", *IEEE Trans. on Signal Processing*, to appear.

- Accepted

- D. Nion, **N.D. Sidiropoulos**, "Tensor Algebra and Multi-dimensional Harmonic Retrieval in Signal Processing for MIMO Radar", *IEEE Trans. on Signal Processing*, to appear.
- D. Angelosante, G.B. Giannakis, and **N.D. Sidiropoulos**, "Estimating Multiple Frequency-Hopping Signal Parameters via Sparse Linear Regression", *IEEE Trans. on Signal Processing*, to appear.
- A.B. Gershman, **N.D. Sidiropoulos**, S. Shahbazpanahi, M. Bengtsson, and B. Ottersten, "Convex Optimization-based Beamforming: From Receive to Transmit and Network Designs", *IEEE Signal Processing Magazine*, special issue on Convex Optimization for Signal Processing, pp. 62-75, May 2010.
- A. Abdelkader, A.B. Gershman, and **N.D. Sidiropoulos**, "Multiple-Antenna Multicasting Using Channel Orthogonalization and Local Refinement", *IEEE Trans. on Signal Processing*, 58(7):3922-3927, July 2010.

- Published

- A.B. Gershman, **N.D. Sidiropoulos**, S. Shahbazpanahi, M. Bengtsson, and B. Ottersten, "Convex Optimization-based Beamforming: From Receive to Transmit and Network Designs", *IEEE Signal Processing Magazine*, special issue on Convex Optimization for Signal Processing, pp. 62-75, May 2010.
- A. Abdelkader, A.B. Gershman, and **N.D. Sidiropoulos**, "Multiple-Antenna Multicasting Using Channel Orthogonalization and Local Refinement", *IEEE Trans. on Signal Processing*, 58(7):3922-3927, July 2010.
- D. Nion, K. Mokios, **N.D. Sidiropoulos**, A. Potamianos, "Batch and Adaptive PARAFAC-Based Blind Separation of Convolutional Speech Mixtures", *IEEE Trans. on Audio, Speech and Language Processing*, 18(6):1193-1207, Aug. 2010.
- E. Matskani, **N.D. Sidiropoulos**, Z.-Q. Luo, L. Tassiulas, "Efficient Batch and Adaptive Approximation Algorithms for Joint Multicast Beamforming and Admission Control", *IEEE Trans. on Signal Processing*, 57(12):4882-4894, Dec. 2009.

- Publications in refereed conferences

- Submitted: same as published (see below)

- Accepted: same as published (see below)

- Published

- D. Evaggelinakis, N.D. Sidiropoulos, and A. Swami, "Joint Admission and Power Control Using Branch & Bound and Gradual Admissions", in *Proc. IEEE SPAWC 2010*, June 20-23, Marrakech, Morocco (short-listed for best student paper award).
- H. Zhu, G. Mateos, G.B. Giannakis, N.D. Sidiropoulos, and Arindam Banerjee, "Sparsity-Cognizant Overlapping Co-Clustering for Behavior Inference in Social Networks", in *Proc. IEEE ICASSP 2010*, Mar. 14-19, Dallas, Texas.
- D. Angelosante, G.B. Giannakis, and N.D. Sidiropoulos, "Multiple frequency-hopping signal estimation via sparse regression", in *Proc. IEEE ICASSP 2010*, Mar. 14-19, Dallas, Texas.
- I. Mitliagkas, N.D. Sidiropoulos, and A. Swami, "Distributed Joint Power and Admission Control for Ad-hoc and Cognitive Underlay Networks", in *Proc. IEEE ICASSP 2010*, Mar. 14-19, Dallas, Texas.

- Books and edited book chapters
- Patents

## C – Awards & Distinctions

- *Distinguished Lecturer* of the IEEE Signal Processing Society for 2008-2009.
- *Invited plenary talk*: N.D. Sidiropoulos, “Cross-layer Wireless Networking: Complexity, Approximation, and Opportunities for SP Research”, *IEEE SPAWC 2010 Workshop*, June 20-23, Marrakech, Morocco.
- SPAWC 2010 paper with Dimitris Evaggelinakis was short-listed for best student paper award.

## D – Funded Projects

- Current projects:
  - Joint Transceiver Optimization and Scheduling / Admission Control in Wireless Networks, ERO, PI: N.D. Sidiropoulos. Funding level: 20K €.
  - Participant in FP project N-CRAVE (PI: L. Tassiulas)
- Project proposals submitted:
  - NOPTILUS FP7 IP (funded; will start 04/2011)
  - Submitted FET targeted research proposal on Brain-Inspired ICT (not funded)
  - Submitted two proposals under the «ΣΥΝΕΡΓΑΣΙΑ» program (not funded)
  - Submitted one and participated in two other proposals under the “THALIS” program (pending)

## E – Professional service

- Associate Editor duties
  - Member of the Editorial Board, *IEEE Signal Processing Magazine* (Jan. 2009 -)
  - Associate Editor, Elsevier *Signal Processing* (Jan. 2009 -)
  - *Guest Editor, IEEE Signal Processing Magazine: Special Issue on Convex Optimization in Signal Processing* (with Z.-Q. Luo, Y. Eldar, D. Palomar, K. Ma), May 2010.
- Society Technical Committee duties
  - Member, *Sensor Array and Multichannel Signal Processing Technical Committee, IEEE Signal Processing Society* (till Dec. 31, 2009).
- Conference Technical Program Committee service
  - IEEE ICASSP 2010
  - IEEE CAMSAP 2009
  - SIAM TDA 2010
- Conference Organization (specify role)
  - Tutorials and student paper awards chair for IEEE ICASSP 2011 – Prague
  - Publicity chair for IEEE ICASSP 2015 - Australia

- Reviewing activities
  - Regular reviewer for *IEEE Trans. on Signal Processing*, *IEEE Trans. on Communications*, *IEEE Trans. on Wireless Communications*.

## **F – Service to the Department and the School**

- Departmental responsibilities
  - Laboratory Director, Telecommunications Lab, Department of Electronic and Computer engineering, Technical University of Crete.
- School-level responsibilities
  - Associate Director and Member of the Board, Telecommunication Systems Institute, Technical University of Crete.

## **G – Advising**

- Active graduate students supervised
  - Ph.D. and M.Sc. students supervised
    - Evaggelia Matskani (Ph.D). Year of initial enrollment in program: 2007.
    - Dimitris Evaggelinakis (M.Sc.). Year of initial enrollment in program: 2007.
    - Ioannis Mitliagas (M.Sc.). Year of initial enrollment in program: 2008.
    - Evaggelos Papalexakis (M.Sc.). Year of initial enrollment in program: 2010.
  - PhD. And M.Sc. degrees awarded
    - Dimitris Evaggelinakis, M.Sc., July 2010
    - Ioannis Mitliagas, M.Sc., July 2010
- Undergraduate students supervised
  - Diploma theses in progress (supervisor)
    - Ioannis Sarris, “Social network analysis using multi-dimensional scaling”.
    - Konstantinos Apostolou, “Crosstalk onset detection and rate back-off in xDSL”.
  - Diploma theses completed (supervisor)
    - Vaggelis Papalexakis, “Reviewer profiling using factor analysis”, Feb. 2010.