

Emmanouil Koukoumidis

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EDUCATION

Princeton University (NJ), Electrical Engineering Department. **09.06 – present**
Ph.D. in Electrical Engineering (G.P.A.: 3.83/4.00).
M.A. in Electrical Engineering (2008).
Advisors: Prof. Margaret Martonosi, Associate Prof. Li-Shiuan Peh.

National Technical University of Athens (NTUA, Greece). **10.01 - 02.07**
Diploma in Electrical and Computer Engineering.
G.P.A.: 9.34/10, top 2%.

RESEARCH

Princeton University SARANA project. **02.2007 – present**
Co-designed and co-developed SARANA (Space Aware Resource Aware Network Architecture), a full system architecture aimed at the efficient collaboration of dynamic sets of mobile devices. Focused mainly on the networking aspects of SARANA including remote application launching and code updates.

Google Inc Software Engineering Intern, Mountain View, CA. **06.2008 – 8.2008**
Improved the design of the novel MAC/PHY-layer protocol that was drafted in my summer '07 internship. Derived mathematical models that describe the MAC protocol's behaviour and interaction with reliable transport layer protocols like TCP. A couple of patents to be filed.
Supervisors: Dr. Kevin Yu, Phil Gossett, Mike Gunter, Dr. Greg Chesson.

Google Inc Software Engineering Intern, Mountain View, CA. **06.2007 – 8.2007**
Designed parts of a novel MAC/PHY-layer protocol for wireless networks. Invented a light-weight and fast association and handoff protocol and at the same time contributed significantly to the scheduling part. Supervisors: Phil Gossett, Mike Gunter, Dr. Kevin Yu.

ICCS Intern – I-SENSE Group, Athens, Greece. **10.2005 – 09.2006**
Diploma Thesis: "Development of an extensible network platform for real time data collection & fusion in intelligent vehicles' networks".
The thesis was carried out in close collaboration with the I-SENSE group of ICCS (Institute of Communications and Computer Systems - Greece). The platform (implemented in Visual C++ .NET) was presented in European research programs, in which universities and companies (Bosch, Fiat, Volvo, Daimler Chrysler etc.) showed great interest. As a result the platform is now being extended from I-SENSE researchers and used for testing of data fusion algorithms. Supervisor: Prof. Uzunoglu (NTUA).

CERN Intern - Accelerators' Technology and Beams Group, Switzerland. **07.2005 - 08.2005**
Mathematically solved the problem of controlling the SPS (Super Proton Synchrotron) beam steering dipole magnets of the T4 target. Also developed a computation and visualization tool (Java) to produce the necessary magnets currents configuration based on user input for desired primary and secondary beams energies. Work published by CERN. Supervisors: Dr. Efthymiopoulos Ilias, Dr. Chauchaix Bruno.

PATENTS AND PUBLICATIONS

[1] Vincent Lenders, Emmanouil Koukoumidis, Pei Zhang and Margaret Martonosi. Location-based Trust for Mobile User-Generated Contents: Applications, Challenges and

- Implementations. In *Ninth IEEE Workshop on Mobile Computing Systems and Applications (HotMobile)*. Napa Valley, CA, USA, February 2008.
- [2] Pradip Hari, Kevin Ko, Emmanouil Koukoumidis, Ulrich Kremer, Margaret Martonosi, Desiree Ottoni, Li Shiuian Peh and Pei Zhang. SARANA: Language, Compiler, and Runtime System Support for Spatially-Aware and Resource-Aware Mobile Computing. *Philosophical Transactions of the Royal Society* 2008.
 - [3] Emmanouil Koukoumidis, Ilias Efthymiopoulos, Bruno Chauchaix. T4 Wobbling – Solving the puzzle. *Internal CERN publications*. Geneva, Switzerland, August 2005.
 - [4] Two or three patents to be submitted with Google Inc. engineers on the association, handoff and scheduling parts of a novel MAC\PHY-layer protocol for wireless networks.

TEACHING EXPERIENCE

- TA in “System Design and Analysis” (ELE 302): Princeton U., Spring 2009.
- TA in “Computer Programming”: NTUA, Fall 2002-2005.
- TA in “Programming Techniques”: NTUA, Spring 2003-2006.
- Tutored engineering and natural sciences undergraduate students in Electromagnetism, Electrical circuits, Electronics, Programming in Pascal/FORTRAN/C (2002-2006).

MAJOR SOFTWARE PROJECTS

- Complete compiler for an OCaml like language (C, flex, bison).
- Complete monolithic OS development (boot loader, synchronization primitives, scheduler, shell, inter-process communication, keyboard driver, virtual memory and file system).
- Decaying cache memory simulator and design optimization for specific applications (C, Bochs).
- VECS: 2D Virtual Environment Collaboration System (Java – RMI).
- Connect-4 game engine (C, AB pruning search algorithm).
- Optimal path finder for robot navigation in multi-storey building (Prolog, A*).
- GRID user management portal (JSPs, MySQL).
- Commercial company database management application (Java, Microsoft SQL Server 2000).

COMPUTER SKILLS

- Languages: Intel 8085/86 assembly, ARM assembly, C, C++, Java (Swing, Servlets, Applets, servlets, JSPs, RMI), Fortran, Lisp, Pascal, Prolog, Javascript, HTML(+CSS), XML, XSL.
- Multiprogramming: C (Unix and Win32), C++ (.NET), Java.
- Parallel processing: MPI, OpenMP.
- DBMSs: MySQL Server 4.1, Microsoft SQL Server 2000.
- Other packages: MATLAB, ADS/Spice, Apache Tomcat 4.1, 3D-Studio Max.
- Operating Systems: Linux, Windows.

AWARDS AND COMMENDATIONS

- Princeton University Fellowship (2006).
- Stanley J. Seeger prize (2006-2009).
- S. Onassis Public Benefit Foundation Seminar Scholarship (2006).

STUDENT LEADERSHIP

Chair, Graduate Student Government Events Board, Princeton U.	2008 - 2009
Treasurer, Graduate Student Government Executive Committee, Princeton U.	2008 - 2009
Member, Electrical Engineering Graduate Student Committee, Electrical Engineering Department, Princeton University.	2007 – 2009
Academics Director, IEEE Princeton University Student Branch.	2006 – 2008