

# SOFOKLIS EFREMIDIS

## CURRICULUM VITAE

### 1 Contact Details

Athens Information Technology  
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### 2 Academic Titles

- Ph.D. in Computer Science, Cornell University, U.S.A., May 1994. Minor in Mathematics.
- M.Sc. in Computer Science, Cornell University, U.S.A., August 1991.
- Diploma in Electrical Engineering, National Technical University of Athens, Greece, September 1986.

### 3 Education

- Department of Computer Science, Cornell University, U.S.A., 1988–1994. Ph.D. Thesis Title: On Program Transformations (Thesis Advisor: Professor D. Gries).
- Department of Computer Science, University of Maryland, College Park, U.S.A., 1987–1988.
- Department of Electrical Engineering, Division of Computer Science, National Technical University of Athens, Greece, 1982–1986. Undergraduate Thesis Title: An Interpreter for Evaluation of Attribute Grammars (Thesis Advisor: Professor G. Papakonstantinou).
- Department of Electrical Engineering, University of Patras, Greece, 1981–1982.

### 4 Positions Held

- September 2003 – present: Faculty, Athens Information Technology
- March 1999 – September 2003: Head of the Representation Office in Brussels of INTRACOM S.A.
- October 1996 – February 1999: Project coordinator, INTRACOM S.A.
- April 1996 – October 1996: Research Associate, National Technical University of Athens
- July 1994 – April 1996: System analyst, designer, programmer, Hellenic Air Force Headquarters

### 5 Academic Activities

#### 5.1 Journal Papers

- *Remote Supervision of the Home Environment from Mobile Terminals*, S. Efremidis, A. Touloupis. International Journal of Sensors, Wireless Communications and Control, 2012.
- *Grid-based Virtual Laboratory Experiments for a Graduate Course on Sensor Networks*, I. Christou, S. Efremidis, T. Tiropanis. IEEE Transactions on Education, Special issue on use of grid technologies. Vol. 50, Number 1, February 2007.
- *Use of Agent Technology in Service and Retailer Selection in a Personal Mobility Context*, S. Efremidis, et. al. Journal of Computer Networks, pp. 2079–2098, Elsevier-North Holland, 31, 1999.

- *Mobile Agents in Support of Personal Mobility*, D. Prevedourou, K Zygourakis, S. Efremidis, A. Kind, J. Nicklisch, G. Stamoulis, D. Kalopsikakis, A. Kirikoglou. *Journal of Network and Service Management*, 1999.
- *Agent based Personal Mobility Support*, S. Efremidis, D. Prevedourou, K. Zygourakis, G. Stamoulis, P. Demestichas. Special Issue on advanced Strategies and Technologies for Broadband Telecommunications Management, *ICON Journal*, 1999.
- *AML: Attribute Grammars in ML*, S. Efremidis, K. Mughal, J. Reppy, L. Soraas. *Nordic Journal of Computing*. 4(1): 37–65, Spring 1997.
- *Semantically Driven Parsing of Context Free Languages*, S. Efremidis, M. Sideris, G. Papakonstantinou. *The Computer Journal*, vol. 32, No. 1, 1989.
- *Complexity Characterizations of Attribute Grammar Languages*, S. Efremidis, C. Papadimitriou, M. Sideris. *Information and Computation*, vol. 77, 1988. Elsevier Publishers.

## 5.2 Conference Papers

- *Advances in the MASELTOV Game – Mobile Assistance for Social Inclusion and Empowerment of Immigrants with Persuasive Learning Technologies and Social Network Services*, L. Paletta; I. Dunwell; M. Gaved; J. Bobeth; S. Efremidis; P. Luley; A. Kukulska-Hulme; S. de Freitas; P. Lameris and S. Deutsch, *Advances in Computer Entertainment, 10th International Conference, ACE 2013, Boekelo, The Netherlands, November 12–15, 2013. Proceedings by Springer Verlag, 2013*
- *Challenges in context-aware mobile language learning: the MASELTOV approach*, Mark Gaved, Iakovos Georgiou, Patrick Luley, Agnes Kukulska-Hulme, Eileen Scanlon and Ann Jones. *mLearn 2014*, Nov. 3–5, Istanbul, Turkey
- *Challenges in context-aware mobile language learning: the MASELTOV approach*, M. Gaved, P. Luley, S. Efremidis, I. Georgiou, A. Kukulska-Hulme, A. Jones and E. Scanlon, *mLearn 2014*, Istanbul, November 2014
- *Oblique Decision Trees Using Embedded Support Vector Machines in Classifier Ensembles*, V. Menkovski, I. T. Christou, and S. Efremidis, *IEEE CIS 2008*.
- *An Intelligent CASE Tool for Porting Mobile Java Applications*. I. T. Christou, S. Efremidis, A. Roukounaki, M. Anapliotis. 4th IFIP Conference on Artificial Intelligence Applications & Innovations (AIAI), 2007. 19–21 September, 2007.
- *An Evolving Oblique Decision Tree Ensemble Architecture for Continuous Learning Applications*. I. T. Christou and S. Efremidis. 4th IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI), 2007. 19–21 September, 2007.
- *A Classifier Ensemble Approach to Intrusion Detection of Network Initiated Attacks*, S. Koutsoutsos, I. T. Christou, and S. Efremidis. *Emerging Artificial Intelligence Applications in Computer Engineering*. IOS Press 2007.
- *Software Configuration Management for ambient intelligence: the COMANCHE approach*, S. Grilli, E. Makri, N. Mouratidis, K. Steblovnik, S. Efremidis, P. Mähönen, E. Meshkova. *IEEE International Symposium on Ubiquitous Computing and Intelligence*, UCI 2007, Niagara Falls, Canada.
- *An Intrusion Detection System for Network-Initiated Attacks Using a Hybrid Neural Network*, S. Koutsoutsos, I. Christou, S. Efremidis. 3<sup>rd</sup> IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI) 2006, University of Aegean. June 7–9, 2006. Also published in *IFIP International Federation for Information Processing*, Springer Boston, 2006.
- *Seamless and Dynamic Invocation of Web Services from within CORBA Environments*, P. Zikos, S. Efremidis, T. Tiropanis. *IEEE International Conference on Web Services (ICWS 2005)*, Orlando, Florida, July 2005.
- *Cooling the Hell of Distributed Applications' Deployment*, J. Bonnet, F. Dubois, S. Efremidis, P. Leonardo, N. Malavazos, D. Vincent, *IS&N 2000 Conference*, Athens, Greece. Also in *Lecture Notes in Computer Science*, Springer Verlag, 2000.
- *Agent-based Service and Retailer Selection in a Personal Mobility Context*, G. Stamoulis, D. Kalopsikakis, A. Kirikoglou, V. Siris, D. Prevedourou, S. Efremidis, H. Jormakka. *IS&N 99 Conference*, Barcelona, Spain. Also in *Lecture Notes in Computer Science 1597*, pp. 429–442, Springer Verlag, 1999.

- *TINA-oriented Service Engineering Support to Service Composition and Federation*. S. Efremidis, D. Prevedourou, L. Demounem, K. Milsted, H. Zuidweg. IS&N 98 Conference, Antwerp, Belgium. Also in Lecture Notes in Computer Science 1430, pp. 409–422, Springer Verlag, 1998.
- *Teaching Software Engineering through the Net*, S. Efremidis, S. Retalis, N. Papaspyrou, M. Skordalakis. Proceedings of the 1997 Software Quality Engineering Conference, Udine, Italy, May 1997.
- *The AML Project: A System Overview*, S. Efremidis, K. Mughal, J. Reppy. Proceedings of the 1992 Norwegian Informatics Conference, Tromsø, Norway, November 1992, pp. 129–135, TAPIR, 1992.
- *Attribute Grammars in ML*, S. Efremidis, K. Mughal, J. Reppy. Proceedings of the ACM SIGPLAN 1992 Workshop on ML and its Applications, San Francisco, California, June 1992, pp. 194–200.
- *Complexity Characterizations of Attribute Grammar Languages*, S. Efremidis, C. Papadimitriou, M. Sideris. Proceedings of the Second Structures in Complexity Theory Conference, June 1987, Cornell University, U.S.A.
- Χτίζοντας τους Ανοιχτούς Εκπαιδευτικούς μας Ορίζοντες, Γ. Κοτσάνης, Οδυσσέας Τσάταλος, Σοφοκλής Εφραιμίδης, Εισήγηση στην Διάσκεψη «Πληροφορική και Εκπαίδευση» Δεκέμβριος 1987
- *Error Recovery Using Attribute Grammars*, S. Efremidis, G. Papakonstantinou, M. Sideris, M. Skordalakis. System Fault Diagnostics, Reliability and Related Knowledge-Based Approaches, vol. 2, pp. 123–132, 1987, S. Tzafestas editor, D. Reidel Publishing Company.

### 5.3 Book Chapters

- *Advances in MASELTOV – Serious Games in a Mobile Ecology of Services for Social Inclusion and Empowerment of Recent Immigrants*, L. Paletta, I. Dunwell, M. Gaved, J. Bobeth, S. Efremidis, P. Luley, A. Kukulka-Hulme, S. de Freitas, P. Lameris, S. Deutsch, Springer Verlag, LNCS 8253, pp. 440–455, 2013
- *A Classifier Ensemble Approach to Intrusion Detection of Network Initiated Attacks*, S. Koutsoutsos, I. T. Christou, and S. Efremidis. Emerging Artificial Intelligence Applications in Computer Engineering. IOS Press 2007.
- *Ambient User Interfaces to Building Data*, Industrialized, Integrated, Intelligent Construction, Handbook I. I3CON Publications, 2009

### 5.4 Technical Reports

- A Parallel/Distributed Algorithmic Framework for Mining All Quantitative Association Rules, I. Christou, S. Efremidis, <https://arxiv.org/abs/1804.06764>.
- *On Program Transformations*, Ph.D. Thesis, Cornell University, May 1994.
- *AML: Attribute Grammars in ML*, S. Efremidis, K. Mughal, J. Reppy. Technical Report, Department of Computer Science, Cornell University TR 93/1401, December 1993 (also Report No. 89, Reports in Informatics, University of Bergen, Norway).
- *An Algorithm for Processing Program Transformations*, S. Efremidis, D. Gries. Technical Report, Department of Computer Science, Cornell University TR 93/1389, October 1993.
- *The Implementation of the system SDF*, S. Efremidis, G. Papakonstantinou, M. Sideris. Technical Report, Department of Electrical Engineering, Division of Computer Science, National Technical University of Athens, 1986.
- *An Interpreter for Evaluation of Attribute Grammars*, Undergraduate Degree Thesis, Department of Electrical Engineering, Division of Computer Science, National Technical University of Athens, 1986.

### 5.5 Conference Organization

- *INMOTOS Final Project Workshop (November 2012)*
- *IFIND Interim Project Workshop (June 2015)*

## 5.6 Teaching

### 5.6.1 Academic

- Instructor, Athens Information Technology, since September 2002, graduate courses on
  - Computer Algorithms, Introduction to Cryptography and Computer Security, Operating Systems, Advanced Operating and Distributed Systems, Distributed Systems, Database Systems, Programming Languages, Object Oriented Programming, Software Engineering, Secure Software Engineering, Information Systems Modeling, Computer Architecture, Programming Languages and Compilers, Software Development Techniques, Formal Methods, Information Security and Cryptography, Cybersecurity, Human Computer Interaction
- Instructor, Cornell University
  - Unix and C, Spring 1992 to Fall 1993
  - Practicum in Operating Systems, Fall 1988 and Summer 1990
- Teaching Assistant, Cornell University, in the following undergraduate courses
  - Computer Architecture, Spring 1991
  - Introduction to Programming, Spring 1990
  - Numerical Analysis, Fall 1989
  - Computer Graphics, Spring 1989
- Teaching Assistant, University of Maryland, College Park
  - Programming Languages, Fall 1987

### 5.6.2 Executive Education

- Instructor of professional courses offered by Athens Information Technology on
  - Blockchain technologies
  - Software architectures
  - Java for C++ programmers and design patterns
  - Java EE and Web services
  - Database Systems
  - Assembly Language Programming, Pascal and Perl
  - Java and object oriented programming
  - The Unified Modeling Language
  - Programming in Java
  - Programming in C, C++, Java
  - Special Topics in Networking and Operating Systems
- Instructor of professional course offered by National Technical University of Athens on
  - Programming Language C and the Unix Environment

## 5.7 Supervised Theses

1. A platform for enhanced transportation services, March 2015
2. Analysis of Garbage Collection Algorithms, Independent Study, September 2013
3. Project MyPharmacy for sharing drugs to socially sensitive groups
4. A Platform for locating pharmacies, MSITT Thesis, September 2013
5. An Integrated System for AIT's Student & Course Management, MSITT Thesis, September 2013
6. Smartphone-based home system automation, MSITT Thesis, September 2012
7. An engine for animating instant tickets using HTML 5, MSITT Thesis, September 2012
8. An engine for content browsing through Android-based smartphones, MSITT Thesis, September 2012
9. Design and implementation of a polymorphic engine, March 2011
10. Remote monitoring of home environment through Android devices, November 2010
11. A platform for eLearning through mobile devices, October 2010
12. A profile matcher for mobile devices based on a rule engine, January 2010
13. eLearn, A portal for eLearning, Independent study, December 2009

14. A Peer-2-Peer Mobile Communication Framework, June 2008.
15. Runtime version updating of software components, May 2008.
16. Ontology-Based Smart Home Networks, September 2007.
17. Intrusion Detector driven by program specifications (also: SMART – “Syscall Monitoring and Auditing Tool), December 2006
18. Intrusion A Simulator for self replicating and self repairing automata, January 2006  
Detection Techniques, Fall 2005 (thesis aborted by student)
19. Design and Implementation of an object oriented language, April 2005

## 5.8 Talks

1. Overview of Blockchain activities at AIT, Strategis Cluster, October 10, 2018
2. “State of the Art, analytics for unstructured data”, I-FIND workshop, Athens, June 2015
3. “ICT Infrastructure Interdependency Use Case, Contingency Plan, Risk Detection, Identification, and Reaction”, INOMOTOS Workshop, Genova, March 2012
4. “Software updates”, Workshop FP7 project ESTIA, Stuttgart, 11–12 March 2008.
5. “COMANCHE”, EC IST Conference on Software Technologies, September 2006.
6. “Systems Dependability”, Athens Information Technology Research Seminar, February 2006.
7. “Designing Dependable Systems”, Information Security Workshop, Athens Information Technology, May 5, 2005.
8. “Self Healing Systems: current views and future expectations”, AIT Research Seminar, April 22, 2005.

## 5.9 Awards

- Research Assistant, Cornell University. Fall 1990, and Summer 1991 to Spring 1994
- Teaching Assistant, Cornell University. Fall 1988 to Summer 1990, and Spring 1991
- Research Assistant, University of Maryland, College Park. Spring 1988
- Teaching Assistant, University of Maryland, College Park. Fall 1987

# 6 Research Activities

## 6.1 Summary

- Assistant Professor, Athens Information Technology, since June 2004.
  - Research activities on applications for mobile devices, dependable systems, distributed systems, middleware technologies and services, modeling, software engineering and configuration management, service oriented architectures, applications of sensor networks, porting of mobile applications, applications of machine learning techniques.
- Research Associate, National Technical University of Athens, Department of Electrical Engineering, Division of Computer Science, Laboratory of Software Engineering, April 1996 to October 1996.
  - Applicability and comparative studies of software development methodologies for Web-based tele-education systems.
- Research Assistant, Cornell University, Department of Computer Science (Professor D. Gries), Fall 1990 to Spring 1994.
  - Research on program transformation techniques, in particular the mapping of abstract user-defined data types to concrete implementations with the use of transformation rules. Design and analysis of algorithms for program transformations. Design and implementation of programming language constructs as part of the experimental language Polyva, as well as their applicability to algorithms that employ abstract data types.
  - Research on embedding of Attribute Grammars in functional languages. ML was augmented to support definition and evaluation of attributes associated with terms.
- Research Assistant, National Technical University of Athens, Department of Electrical Engineering, Division of Computer Science, Fall 1986 and Spring 1987.

- Research on theoretical aspects of Attribute Grammars, and the computational power of several classes of attribute grammars. Design and development of dynamic evaluators for Attribute Grammars.

## 6.2 Research Projects

- Technical management, project coordination and participation in several EU funded research projects in the areas of software systems and technologies. Areas of past and present work include
  - Architecture and design of infrastructure for security services to IoT deployments
  - Monitoring compliance with the GDPR of software developments for authentication through voice biometrics
  - Development of knowledge extraction from fusion and correlation from different social media sources
  - Development of services for mobile devices for the social inclusion of immigrants.
  - Development of technologies for software configuration management of home environment applications, case studies for content distribution networks for 3 play services.
  - Development of technologies and infrastructures for the enhancement of the dependability of systems that manage critical infrastructures.
  - Development of technologies for supporting building operational services by employing sensor network technologies.
  - Model Driven Architectures for the modeling and development of complex distributed services. Applicability of MDA to telecom services and mappings from platform independent to platform specific models for diverse middleware and hardware platforms.
  - Middleware services for distribution and configuration of distributed applications. Formalisms for expressing distribution and configuration requirements as well as specifications of middleware capabilities for the support of distribution and configuration of distributed applications were studied, researched and defined.
  - Agent technologies and their application to service selection and provision in a personal mobility context. User profile as well as accounting and charging issues were addressed.
  - Methodologies and service creation practices for the development of telecommunications services. UML and SDL were employed for the modeling and development of distributing telecom applications. Target service architecture was TINA while CORBA and Internet were the distributed platforms.

## 6.3 Awards and Grants Received

1. EU project OCTAVE. Started June 2015. Duration 24 months. Funding €267,500.00 (shared). Authentication through voice biometrics
2. EU project I-FIND. Started October 2014. Duration 18 months. Funding €112,127.00. Information finding in non-structured data
3. EU project MASELTOV. Started January 2012. Duration 39 months. Services for social inclusion of immigrants
4. INTRALOT dmAuthor, authoring tool for lottery client terminals, €50,000.00.
5. EU project INMOTOS (JLS/2009/CFP/CIPS). Started January 2011. Duration 18 months. Funding €246,039.00. Risk assessment methodologies for critical infrastructure interdependencies
6. INTRALOT Instant Game Platform. Started 1/2/2010, duration 12 months.
7. EU IP project DESEREC (FP6-IST-2004-026600). Started 1/1/2006, duration 40 months. Funding €445,911.00.
8. EU STREP project COMANCHE (FP6-IST-034909). Started 1/9/2006, duration 26 months. Funding €292,668.70.
9. EU IP project I3CON (FP6-NMP-026771). Started 1/10/2006, duration 48 months. Funding €149,400.00.
10. INTRALOT Mobile Porter research contract. Started 1/6/2006, duration 24 months. Funding €80,000.00.
11. EU project COACH (FP5-IST-2001-34445). Funding €285,832.00
12. EU project MODATEL (FP5-IST-2001-37785). Funding €172,278.00

13. EURESCOM P924 (EURESCOM, subcontracting to OTE). Funding €50,476.89.

#### 6.4 Other Submitted Research Proposals

1. CYBERSEC4Health, Horizon 2020, H2020-SC1-FA-DTS-2018-2020 (Trusted digital solutions and Cybersecurity in Health and Care), topic: SU-TDS-02-2018 (RIA action)
2. TouriSkills, ΕΔΚ/ΕΣΠΑ 2017, Skills matching and development for the tourist sector
3. MiGamSDK, ΕΔΚ/ΕΣΠΑ 2017, SDK for lottery games
4. DOLCE, H2020-ICT-10-2016 (RIA)
5. PALIO: HOME/2012/ISEC/AG
6. DevOps4IoT, review of technical part
7. OCTAVE (ICT-SEC Innovation), User authentication services through voice biometrics
8. KENTRI (ΕΣΠΑ/ΣΥΝΕΡΓΑΣΙΑ). Technologies for Energy Optimization of Buildings. 11/2009
9. PP-NET (Personalized Content Aware Media based on Policy Based Networking), FP7-ICT-2009-4, 3/2009
10. ENEROPT-BUILD (Integrated Environment for Energy Optimization of Buildings), FP7-ICT-2009-4, 3/2009
11. GENESIS (Next Generation Content Aware Networks for Autonomous Personalized Service Delivery), FP7-ICT-2009-4-1.5, 3/2009
12. LinkedRisk (Methodologies and Tools for Embedded Systems interdependencies modeling, safety and security evaluation and certification), ARTEMIS 2009/1, 4/2009
13. FIRE (FP7-SEC-2008-1), IP, Technologies for assisting first responders (under preparation).
14. WEAVER (FP7-ICT-2007-3), STREP proposal, a platform for automatic semantic annotation of all sensory content and its semi-automatic synthesis into advanced and innovative applications.
15. SUPERVISE (FP7-SEC-2007-1), IP proposal, surveillance and knowledge management technologies for security purposes, mainly for tackling terrorist acts. Submitted May 2007.
16. SUPRLY (FP7-ICT-2007-7.1), IP proposal, technologies for aiding the elderly. Submitted May 2007, invited by the EC to hearing.
17. MultimediaGrid4All (FP6-IST-5), STREP proposal. multimedia provisioning over grid infrastructures, personalization, DRMs.
18. eCar (FP6-IST-5), STREP proposal, telematics software platform for in-car environments.
19. SIMS (FP6-IST-4.1), STREP proposal on a Scalable Innovative Multimedia Services over a Content-based Audiovisual Platform.
20. iSense (FP6-IST-4), STREP proposal on Multimedia provisioning, content adaptation, personalization, billing.

## 7 Professional Activities

- In charge of the Professional Education activities at AIT since 2014
- Head of the Software Systems Group at AIT
- Member of the MSITT admissions and evaluation committee at AIT
- Representative of INTRACOM S.A. in Brussels, March 1999 – September 2003. Activities include
  - Management of the Representation office of INTRACOM S.A. in Brussels.
  - Liaison with the EC and representation of INTRACOM S.A. to the EC events.
  - Representation of INTRACOM S.A. to project negotiations and reviews.
  - Preparation and coordination of submission of research proposals to the EC.
- Representative of the Federation of Greek Industries in the Working Groups of UNICE.
- Representation INTRACOM S.A. and INTRACOM S.A. Telecom Solutions to the EU Framework Program Consultation meetings.
- Representation INTRACOM S.A. Telecom Solutions to the FP7 Workshop on “Future R&D Challenges in the Networked Audio-Visual Systems”, Brussels, October 6–7 2005.
- Establishment of Software Systems and Web Technologies laboratory, Athens Information Technology
- Co-heading of the Software Engineering and Web Applications Research Group at Athens Information Technology

- Heading of the Software Systems Research Group at Athens Information Technology
- Member of the peer review committee for recruitment of prospective applicants at Athens Information Technology
- Project Coordinator, Communications Software Technologies, Development Programs Department, INTRACOM S.A., October 1996 to February 1999.
- System analyst, designer, programmer. 1994–1996, Hellenic Air Force Headquarters.

### **7.1 Project Reviews**

- Evaluator of National Program Cooperation between Greece and Romania
- EC Reviewer for Project AUTOTUNE (EU FP7)
- EC Reviewer for Project MADES (EU FP7)
- EC Reviewer for Project VIRES (EU ESPRIT)
- EC Reviewer for Project COMPONENT+ (EU IST)
- EC Reviewer for Project SODETEL (EU IST)

### **7.2 Conference Membership**

- Reviewer, CCNC 2009 Conference
- Reviewer, Computer Communications, Elsevier
- Reviewer, 4th IFIP Conference on Artificial Intelligence Applications & Innovations (AIAI 2007)
- Reviewer, Mobile Summit 2006
- Program Committee, 3<sup>rd</sup> European Starting AI Researcher Symposium, STAIRS 2006
- Member of Technical Program Committee and Reviewer, Eurescom 2005 Summit
- Member of Technical Program Committee, Eurescom 2003 Summit
- Member of the Technical Program Committee, IS&N2000 Conference