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Position

Professor of Software Engineering – Object Oriented Design at the Department of Applied Informatics, University of Macedonia, Thessaloniki, Greece

Dean of the School of Information Sciences, University of Macedonia (also serving as Head of the Department of Applied Informatics)

Education**Aristotle University of Thessaloniki, Greece**

PhD degree in Computer Science, May 1997 - June 2000, Grade: "Excellent".

PhD Thesis: Propagation Delay and Power Dissipation Models for Digital CMOS Circuits.

Aristotle University of Thessaloniki, Greece

Diploma in Electrical Engineering (5 year course), September 1991 – July 1996, GPA: 8.28/10.0

Rank: 2nd.

Diploma Thesis: Development of a Flexible Processor using FPGA's. Grade: 10.0/10.0

De Montfort University, Leicester UK

Completed Fall Semester (September 1993-February 1994) in Electrical Engineering within the context of the Erasmus Program of the European Community. Project: Transistor Amplifiers.

14th High school, Thessaloniki, Greece

Graduated Cum Laude, June 1991.

Entered after successful Panhellenic Examinations in the Department of Electrical Engineering, Aristotle University of Thessaloniki. Rank: 4th.

**Research
Experience**

1/1/2018-31/12/2020: Head of the University of Macedonia team in project funded by the European Commission, H2020, ICT-05-2017, RIA Action titled: **“SDK4ED:Software Development toolKit for Energy optimization and technical Debt elimination”**. Total budget: €4,325,918.75

5/2018-4/2021: Head of the University of Macedonia team (in the context of a collaboration with CERTH) in project funded by the European Commission, H2020-FETHPC-2017 titled: **“EXA2PRO: Enhancing Programmability and boosting Performance Portability for Exascale Computing Systems”**. Total budget: €3,475,222.5

5/2018-4/2021: Head of the University of Macedonia team (in the context of a collaboration with Aristotle University of Thessaloniki) in project funded by Greek national funds titled: **“WMS&AR: Innovative services in Warehouse Management Systems with Visual Positioning Systems, Visual Measurement and Augment Reality”**. Total budget: €711,000

8/2015 – 10/2015: Scientific Coordinator of Scientific Services project funded by Siemens, titled: **"Study for the Application of a Software Quality Assurance Plan (SQAP) in the Development, Testing and Documentation of Project SCADA System for Maliakos-Kleidi Tunnels T1, T2, T3 and Leptokaria Control Room"**

2012-2015: Head of the University of Macedonia team in project funded by the European Social Fund and national funds (Thalis), titled: **"STEREO: Software Engineering Research Platform"**

2012-2015: Head of the University of Macedonia team in project funded by the European Social Fund and national funds (Archimedes III), titled: **"APIvsAPP: A Comparative Study of Library and Application Software in Open-Source and Industrial Applications"**

3/2012-3/2013: Scientific Coordinator of Basic Research Project funded by the Research Committee of the University of Macedonia, titled: **"Investigation of Historical Data regarding Design Problems in Object-Oriented Software Systems"**

5/2011 – 4/2014: Main Researcher in Research Project "Cooperation", funded by the Greek Ministry of Education, titled: **"Personalized System for Planning Cultural Activities – myVisitPlanner"**.

1/2010-12/2010: Scientific Coordinator of Basic Research Project funded by the Research Committee of the University of Macedonia, titled: **"Decomposition of complex and non-cohesive code fragments in object-oriented systems employing slicing techniques"**

5/2008-12/2009: Scientific Coordinator of Basic Research Project funded by the Research Committee of the University of Macedonia, titled: **"Automatic identification and resolution of design problems in object-oriented systems"**

4/2006-3/2008: Main Researcher in a Bilateral Research and Technology Collaboration Program (Greece-Ukraine) – funded by the Greek General Secretariat for Research and Technology - titled: **"Instruction Parameter Analysis for Power Modeling of Embedded Microprocessors"**

11/2005- 11/2008: Main Researcher in PENED program (Programme for the Support of Researchers for training young researchers - funded by the Greek General Secretariat for

Research and Technology), titled: "**Development of a Methodology for the Design of Optimized Special Purpose Processors**"

2005-2006: Scientific Coordinator of Basic Research Project funded by the Research Committee of the University of Macedonia, titled: "**Design Pattern Detection in Object-Oriented Systems employing graph algorithms**"

04/2005-12/2007: Main Researcher in project ARCHIMEDES II (Funding of Research Groups - co-funded by the EU and the Greek Ministry of Education), titled: "**Quality Methodology for modern programming techniques**"

11/2001-05/2002: Main Researcher in project EASY-IST-2000-30093 funded by the European Commission under the 5th framework programme of EU RTD, titled: "**Energy-Aware SYstem-on-chip design of the HIPERLAN/2 standard**".

02/2000-09/2001: Main Researcher in PENED program (Programme for the Support of Researchers for training young researchers - funded by the Greek General Secretariat for Research and Technology), titled: "**Memory Management Methodology for Real-Time and Low Power Embedded Multimedia Systems**".

09/1996-11/1996: Imperial College, London, UK. Participation in a research program on "**Reconfigurable Logic and Field Programmable Gate Arrays**" under the supervision of Prof. W. Luk and P.Y.K. Cheung.

06/1995-08/1995: European Laboratory for Particle Physics (CERN), Geneva, Switzerland: Internship in the Microelectronics Group on "**Analysis and Design of a digital integrated circuit required for data acquisition in physics experiments using Hardware Description Languages**" under the supervision of Dr. Marchioro.

06/1994-08/1994: Purdue University, W. Lafayette, IN, USA: Participation in an NSF-REU Program on "**Microelectronic Materials and Processing**". Project title: "TSUPREM-IV Oxidation Tuning" under the supervision of Prof. G.W. Neudeck and C. Takoudis.

**Teaching
Experience**

Undergraduate Courses:

Department of Applied Informatics, University of Macedonia

Software Engineering

Object-Oriented Programming

Procedural Programming

Algorithms

Introduction to Computer Science

Computer Organization

Postgraduate Courses:

Advanced Software Engineering

Object-Oriented Software Development

Computational Thinking and Software

Object-Oriented Programming with C++

Hellenic Open University

Software Design and Management

**Professional
Experience**

12/2017 - : **Dean** of the School of Information Sciences, University of Macedonia

12/2016 - : **Professor**, Univ. of Macedonia

7/2012 – 12/2016 **Associate Professor**, Univ. of Macedonia

12/2006-7/2012: **Assistant Professor**, Univ. of Macedonia

05/2002-12/2006: **Lecturer**, Univ. of Macedonia

2007: - 2017: **Member of the teaching staff** of the Hellenic Open University
03/1997-05/1999: INTRACOM S.A., Greece: **Telecommunications Software Designer** for Ericsson AXE-10 exchanges, with emphasis on signaling.

Honors & Awards

Alexander Chatzigeorgiou was ranked among the **15 top scholars** in the field of systems and software engineering, according to the annual assessment of software engineering scholars and institutions for the period 2003-2007, published in the Journal of Systems and Software. doi:10.1016/j.jss.2010.09.036

Special Recognition Award for an Influential Tool at SANER 2018 (25th IEEE Int. Conference on Software Analysis, Evolution and Reengineering). Citation of award: "The special recognition award recognizes JDeodorant as one of the leading and most widely used tools for code refactoring".

Keynote Speaker at the 7th workshop on Software Quality Analysis, Monitoring, Improvement, and Applications (SQAMIA'2018), Novi Sad, Serbia, August 27-30, 2018, keynote title: Technical Debt: The metaphor, the challenges and the opportunities

1st prize, 'Cooperate' competition in the context of Technology Forum 2016. Collaboration of the Software Engineering team of the University of Macedonia and Yummy Software for Yummy Wallet – ewallet and loyalty system, Thessaloniki, May, 18, 2016

Best Paper Award at the 17th International Conference on Software Reuse (ICSR 2018), Madrid, Spain, May 21-23, 2018

Best Paper Award at the 21st Evaluation and Assessment in Software Engineering Conference (EASE 2017), Karlskrona, Sweden, June 15-16, 2017

Best Paper Award at the 7th Balkan Conference in Informatics (BCI'2015), Craiova, Romania, September 2-4, 2015.

Best Paper Award at the 7th International Conference on the Quality of Information and Communications Technology (QUATIC'2010), Porto, Portugal, September 29-October 2, 2010.

National Scholarship Foundation award for academic achievements during the years 1991-92, 1993-94, 1994-95, 1995-96.

Technical Chamber of Greece **award for academic achievements** during the years 1994-1995, 1995-1996

National Scholarship Foundation award for ranking 4th in the Panhellenic Examinations

Foreign Language Skills

English: Fluent (Certificate of Proficiency in English)
German: Fluent (Goethe-Institut Mittelstufe Zertifikat)
Spanish: Moderate (Diploma Básico)
Greek: Fluent (Native language)

**Professional
Activities**

2017 – : **Associate Editor**, *Journal of Systems and Software*

Reviewer:

IEEE Transactions on Software Engineering

IEEE Transactions on Dependable and Secure Computing

Journal of Systems and Software

Journal of Software Maintenance and Evolution: Research and Practice

Empirical Software Engineering

Information and Software Technology

Software Quality Journal, Software: Practice and Experience

Computers & Education

IEEE Transactions on Circuits and Systems I: Fundamental Theory and Applications

IEE Proceedings, Circuits, Devices and Systems

Program Committee (partial list):

European Joint Conferences on Theory and Practice of Software (ETAPS'2018), Workshop co-chair (with Prof. Nick Vassiliades)

Program co-chair, 17th Panhellenic Conference on Informatics (PCI'2013)

TechDebt2018 - International Conference on Technical Debt, collocated with the International Conference on Software Engineering (ICSE'2018).

14th International Conference on Open Source Systems (OSS'2018)

Ninth International Workshop on Managing Technical Debt (MTD 2017), in conjunction with the 18th International XP Conference, Cologne, May 2017

Software Engineering and Technical Debt (SEaTeD) track at Software Engineering and Advanced Applications (SEAA 2017)

8th Balkan Conference in Informatics (BCI'2017)

IEEE Global Engineering Education Conference (EDUCON 2017), 25-28 April 2017, Athens, Greece

20th Panhellenic Conference on Informatics (PCI'2016)

23rd International Conference on Program Comprehension (ICPC'2015), Early Research Achievements (ERA) track

9th International Workshop on System Quality and Maintainability (SQM'2015)

29th IEEE International Conference on Software Maintenance (ICSM 2013)

16th European Conference on Software Maintenance and Reengineering (CSMR'2012)

15th European Conference on Software Maintenance and Reengineering (CSMR'2011)

Membership:

Technical Chamber of Greece

2014: Subject Matter Expert for the development of educational material for IEEE Software Development Certification Program: Software Proficiency Certifications, Software Professional Certification, Software Master Certification

**Research
Interests**

Technical Debt

Software Maintenance

Software Evolution Analysis

Empirical Studies in Software Engineering

Publications

(Total Number of citations: 2886 - Google Scholar, h-index = 26)

BOOKS

- B[1] Alexander Chatzigeorgiou, *Object-Oriented Design: UML, Principles, Patterns and Heuristics*, Klidarithmos, Athens, 2005.
- B[2] Alexander Chatzigeorgiou, *Software Development based on the ICONIX Methodology*, Hellenic Open University, Study Material for the Course "Design and Management of Software", 2008.
- B[3] Alexander Chatzigeorgiou (in collaboration with E. Tambouris), *Software Design*, Hellenic Open University, 2014

JOURNALS (only publications from 2002 onward are listed)

- [1] A. Chatzigeorgiou and G. Stephanides, "Energy metric for Software Systems", *Software Quality Journal*, vol. 10, no. 4, pp. 355-371, December 2002.
- [2] A. Chatzigeorgiou, "Performance and Power Evaluation of C++ Object-oriented Programming in Embedded Processors", *Information & Software Technology*, vol. 45, pp. 195-201, March 2003.
- [3] A. Chatzigeorgiou, G. Antoniadis, "Efficient Management of Inspections in Software Development Projects", *Information & Software Technology*, vol. 45, pp. 671-680, July 2003.
- [4] A. Chatzigeorgiou, "Mathematical Assessment of Object-Oriented Design Quality", *IEEE Transactions on Software Engineering*, vol. 29, no. 11, pp. 1050-1053, November 2003.
- [5] S. Kougia, A. Chatzigeorgiou, S. Nikolaidis, "Evaluating Power Efficient Data-Reuse Decisions for Embedded Multimedia Applications: An Analytical Approach", *Journal of Circuits, Systems and Computers*, vol. 13, no.1, pp. 151-180, February 2004.
- [6] N. Tsantalis, A. Chatzigeorgiou and G. Stephanides, "Predicting the Probability of Change in Object-Oriented Systems", *IEEE Trans. Software Engineering*, vol. 31, no. 7, pp. 601-614, July 2005.
- [7] S. Nikolaidis, A. Chatzigeorgiou, T. Laopoulos, "Developing an Environment for Embedded Software Energy Estimation", *Computer Standards & Interfaces*, vol. 28, pp. 150-158, Dec. 2005.
- [8] S. T. Halkidis, A. Chatzigeorgiou and G. Stephanides, "A Qualitative Analysis of Software Security Patterns", *Computers & Security*, vol. 25, no. 5, July 2006, pp. 379-392.
- [9] N. Tsantalis, A. Chatzigeorgiou, G. Stephanides, S. T. Halkidis, "Design Pattern Detection using Similarity Scoring", *IEEE Trans. Software Engineering*, vol.32, no.11, Nov.2006, pp.896-909.
- [10] A. Ampatzoglou and A. Chatzigeorgiou, "Evaluation of Object-Oriented Design Patterns in Game Development", *Information and Software Technology*, vol. 49, issue 5, pp. 445-454, May 2007.
- [11] V. Konstantakos, A. Chatzigeorgiou, S. Nikolaidis, T. Laopoulos, "Energy Consumption Estimation in Embedded Systems", *IEEE Transactions on Instrumentation and Measurement*, vol. 57, April 2008, pp. 797-804.
- [12] S.T. Halkidis, N. Tsantalis, A. Chatzigeorgiou, G. Stephanides "Architectural Risk Analysis of Software Systems based on Security Patterns", *IEEE Transactions on Dependable and Secure Computing*, vol. 5, no. 3, July-September 2008, pp. 129-142.
- [13] K. Kouskouras, A. Chatzigeorgiou, G. Stephanides, "Facilitating software extension with design patterns and Aspect Oriented Programming", *Journal of Systems and Software*, vol. 81, issue 10, October 2008, pp. 1725-1737.
- [14] A. Chatzigeorgiou, N. Tsantalis and I. Deligiannis, "An Empirical Study on Students' Ability to Comprehend Design Patterns", *Computers & Education*, vol.51, no. 3, Nov.2008, pp.1007-1016.
- [15] N. Tsantalis and A. Chatzigeorgiou, "Identification of Move Method Refactoring Opportunities", *IEEE Transactions on Software Engineering*, vol. 35, May/June 2009, pp. 347-367.
- [16] N. Tsantalis and A. Chatzigeorgiou, "Identification of Refactoring Opportunities Introducing Polymorphism", *Journal of Systems and Software*, vol. 83, issue 3, Mar. 2010, pp. 391-404.
- [17] M. Mouratidou, V. Lourdas, A. Chatzigeorgiou and C. K. Georgiadis, "An Assessment of Design Patterns' Influence on a Java-based E-Commerce Application", *Journal of Theoretical and Applied Electronic Commerce Research*, vol. 5, issue 1, April 2010, pp. 25-38.
- [18] A. Chatzigeorgiou and E. Stiakakis, "Benchmarking Library an Application Software with Data Envelopment Analysis", *Software Quality Journal*, vol. 19, issue 3, 2011, pp. 553-578.
- [19] N. Tsantalis and A. Chatzigeorgiou, "Identification of Extract Method Refactoring Opportunities for the Decomposition of Methods," *Journal of Systems and Software*, 84(10),Oct.2011,pp.1757-1782.

- [20] M. Fokaefs, N. Tsantalis, E. Stroulia and A. Chatzigeorgiou, "Identification and Application of Extract Class Refactorings in Object-Oriented Systems", *Journal of Systems and Software*, vol. 85, October 2012, pp. 2241-2260.
- [21] A. Chatzigeorgiou and E. Stiakakis, "Combining Metrics for Software Evolution Assessment by means of Data Envelopment Analysis", *Journal of Software Maintenance and Evolution: Research and Practice*, vol. 25, issue 3, March 2013, pp. 303-324.
- [22] A. Chatzigeorgiou and A. Manakos, "Investigating the Evolution of Code Smells in Object-Oriented Systems", *Innovations in Systems and Software Engineering*, vol. 10, March 2014, pp. 3-18.
- [23] S. T. Halkidis, A. Chatzigeorgiou and G. Stephanides, "Brief Review of Software Security History with an Emphasis on Efforts Focused at Early Stages of the Software Lifecycle", *Journal of Information Privacy and Security*, vol. 10, issue 1, 2014, pp. 3-27.
- [24] T. Chaikalis, A. Chatzigeorgiou and G. Examiliotou, "Investigating the Effect of Evolution and Refactorings on Feature Scattering", *Software Quality Journal*, vol. 23, no.1, March 2015, pp. 79-105.
- [25] T. Chaikalis and A. Chatzigeorgiou, "Forecasting Java Software Evolution Trends employing Network Models", *IEEE Transactions on Software Engineering*, vol. 41, June 2015, pp. 582-602.
- [26] A. Ampatzoglou, A. Chatzigeorgiou, S. Charalampidou and P. Avgeriou, "The Effect of GoF Design Patterns on Stability: A Case Study", *IEEE Transactions on Software Engineering*, vol. 41, issue 8, August 2015, pp. 781-802.
- [27] A. Ampatzoglou, A. Ampatzoglou, A. Chatzigeorgiou, and P. Avgeriou. The Financial Aspect of Managing Technical Debt: A Systematic Literature Review. *Information and Software Technology*, vol. 64, August 2015, pp. 52-73.
- [28] A. Chatzigeorgiou, T. Theodorou, G. Violettas, S. Xinogalos, "Blending an Android development course with software engineering concepts", *Education and Information Technologies*, vol. 21, issue 6, November 2016, pp. 1847-1875.
- [29] K. Petridis, A. Chatzigeorgiou and E. Stiakakis, "A SpatioTemporal Data Envelopment Analysis (S-T DEA) approach: The need to assess evolving units", *Annals of Operations Research*, vol. 238, issue 1, March 2016, pp. 475-496.
- [30] T. Amanatidis, A. Chatzigeorgiou, "Studying the Evolution of PHP Web Applications", *Information and Software Technology*, vol. 72, April 2016, pp. 48-67.
- [31] E. M. Arvanitou, A. Ampatzoglou, A. Chatzigeorgiou, and P. Avgeriou, "Software Metrics Fluctuation: A Property for Assisting the Metric Selection Process", *Information and Software Technology*, vol. 72, April 2016, pp. 110-124.
- [32] S. Charalampidou, A. Ampatzoglou, A. Chatzigeorgiou, A. Gkortzis and P. Avgeriou, "Identifying Extract Method Refactoring Opportunities based on Functional Relevance", *IEEE Transactions on Software Engineering*, to be published, 43, 2017.
- [33] E.M. Arvanitou, A. Ampatzoglou, A. Chatzigeorgiou, M. Galster, and P. Avgeriou, "A Mapping Study on Design-Time Quality Attributes and Metrics", *Journal of Systems and Software*, vol. 127, issue 5, May 2017, pp. 52-77.
- [34] T. Amanatidis, A. Chatzigeorgiou and A. Ampatzoglou, "The relation between technical debt and corrective maintenance in PHP web applications", *Information and Software Technology*, vol. 90, October 2017, pp. 70-74.
- [35] M.E. Paschali, A. Ampatzoglou, S. Bibi, A. Chatzigeorgiou, I. Stamelos, "Reusability of Open Source Software across Domains: A Case Study", *Journal of Systems and Software*, vol. 134, December 2017, pp. 211-227.
- [36] S. Xinogalos, M. Satratzemi, A. Chatzigeorgiou and D. Tsompanoudi, "Factors affecting students' performance in Distributed Pair Programming", *Journal of Educational Computing Research*, accepted for publication, 2017
- [37] D. Feitosa, A. Ampatzoglou, P. Avgeriou, A. Chatzigeorgiou, and E. Y. Nakagawa, "What can Violations of Good Practices tell about the Relationship between GoF Patterns and Run-time Quality Attributes?" *Information and Software Technology*, 105, 2019.
- [38] A. Ampatzoglou, S. Bibi, P. Avgeriou, M. Verbeek, and A. Chatzigeorgiou, "Identifying, Categorizing and Mitigating Threats to Validity in Software Engineering Secondary Studies", *Information and Software Technology*, 106, 2019.

[39] P. Kyriakakis, A. Chatzigeorgiou, S. Xynogalos, and A. Ampatzoglou, "Exploring the Frequency and Change Proneness of Dynamic Feature Pattern Instances in PHP Applications", *Science of Computer Programming*, 2019.

CONFERENCES (selected publications)

[1] **A. Chatzigeorgiou**, S. Xanthos, G. Stephanides, "Evaluating Object-Oriented Designs with Link Analysis", *26th International Conference on Software Engineering (ICSE'2004)*, Edinburgh, Scotland, May 23-28, 2004. (**Acceptance ratio: 13%, 58/436**).

[2] A. Chatzigeorgiou and A. Manakos, "Investigating the Evolution of Bad Smells in Object-Oriented Code", *7th International Conference on the Quality of Information and Communications Technology (QUATIC'2010)*, Porto, Portugal, September 29-October 2, 2010, pp. 106-115. **Acceptance ratio: 12%, 16/140. Best Paper Award.**

[3] A. Chatzigeorgiou and G. Melas, "Trends in Object-Oriented Software Evolution: Investigating Network Properties", *34th International Conference on Software Engineering (ICSE'2012)*, New Ideas & Emerging Results track, Switzerland, 2012, pp. 1309-1312. **Acceptance ratio: 17.7%, 26/147.**

[4] P. Kyriakakis, A. Chatzigeorgiou, "Maintenance Patterns of large-scale PHP Web Applications", *30th International Conference on Software Maintenance and Evolution (ICSME'2014)*, Victoria, British Columbia, Canada, Sept. 28 – Oct. 3, 2014. (**Acceptance rate: 19%**)

[5] A. Chatzigeorgiou, T. Chaikalis, G. Paschalidou, N. Vesypoulos, C. K. Georgiadis and E. Stiakakis, "A Taxonomy of Evaluation Approaches in Software Engineering", *7th Balkan Conference in Informatics*, Craiova, Romania, September 2-4, 2015 (**Best Paper Award**).

[6] E.M. Arvanitou, A. Ampatzoglou, A. Chatzigeorgiou and P. Avgeriou, "A Method for Assessing Class Change Proneness», *21st Conference on Evaluation and Assessment in Software Engineering (EASE'2017)*, Sweden, June 15-16, 2017. **Best Paper Award**

[7] G. Digkas, M. Lungu, A. Chatzigeorgiou, A. Ampatzoglou and P. Avgeriou, "How Do Developers Pay Back Technical Debt in the Apache Ecosystem?", *25th IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER 2018)*, Campobasso, Italy, March 20-23, 2018

[8] N. Tsantalis, T. Chaikalis, A. Chatzigeorgiou, "Ten Years of JDeodorant: Lessons Learned from the Hunt for Smells" *25th IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER 2018)*, Campobasso, Italy, March 20-23, 2018. **Most Influential Paper award.**

[9] A. Ampatzoglou, S. Bibi, A. Chatzigeorgiou, P. Avgeriou, and I. Stamelos, "Reusability Index: A Measure for Assessing Software Assets Reusabilit", in *17th International Conference on Software Reuse (ICSR)*. Springer, Madrid, Spain, May 21-23, 2018. **Best Paper Award.**