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RESEARCH INTERESTS Software maintenance, Empirical software engineering, Refactoring recommendation systems, Software quality assurance, Design pattern detection

WORK EXPERIENCE **Assistant Professor** July 2012 – present  
 Department of Computer Science and Software Engineering,  
 Concordia University, Montreal, Canada

**Postdoctoral Fellow** Jan 2011 – May 2012  
 Department of Computing Science,  
 University of Alberta, Edmonton, Canada  
 Supervisor: Prof. Eleni Stroulia, NSERC/iCORE Industrial Research Chair on “Service Systems Management”

EDUCATION **University of Macedonia**, Thessaloniki, Greece

Ph.D. in Applied Informatics (Software Engineering) Dec 2006 – Sep 2010

- Thesis: “Evaluation and Improvement of Software Architecture: Identification of Design Problems in Object-Oriented Systems and Resolution through Refactorings”

M.Sc. in Applied Informatics (Computer Systems) Oct 2004 – Aug 2006

- Thesis: “Design Pattern Detection Using Graph Matching Algorithms”

B.Sc. in Applied Informatics Oct 2000 – Sep 2004

- Thesis: “Predicting the Probability of Change in Object-Oriented Systems”

LICENSING Professional Engineers of Ontario - Limited License in the category of Software  
 License number: 100221052  
 Date of issue: November 3rd, 2015

RESEARCH FUNDING	Project	Funding Source	Duration
	Pattern Extraction (PI)	Huawei Technologies	Jan'16 – Jan'17
	Concordia University Research Chair in Web Software Technologies (PI)	Vice-President, Research and Graduate Studies	Jun'15 – May'20
	Improving the Maintainability and Efficiency of Cascading Style Sheets (PI)	FRQNT New University Researchers Start-up	May'14 – May'16
	A Framework for the Management of Preventive Maintenance (PI)	NSERC Discovery	Apr'13 – Mar'18
	Supporting Preventive Maintenance through the Detection of Refactoring Opportunities (PI)	ENCS Start-up	Jul'12 – Apr'14

REFEREED  
JOURNAL  
PAPERS

1. E. da S. Maldonado, E. Shihab, and **N. Tsantalis**, “Using Natural Language Processing to Automatically Detect Self-Admitted Technical Debt,” *IEEE Transactions on Software Engineering*, 2017.
2. **N. Tsantalis**, D. Mazinianian, and G. P. Krishnan, “Assessing the Refactorability of Software Clones,” *IEEE Transactions on Software Engineering*, vol. 41, no. 11, pp. 1055-1090, November 2015.
3. M. Fokaefs, **N. Tsantalis**, E. Stroulia, and A. Chatzigeorgiou, “Identification and Application of Extract Class Refactorings in Object-Oriented Systems,” *The Journal of Systems and Software*, vol. 85, no. 10, pp. 2241-2260, October 2012.
4. **N. Tsantalis**, and A. Chatzigeorgiou, “Identification of Extract Method Refactoring Opportunities for the Decomposition of Methods,” *The Journal of Systems and Software*, vol. 84, no. 10, pp. 1757-1782, October 2011.
5. **N. Tsantalis**, and A. Chatzigeorgiou, “Identification of Refactoring Opportunities Introducing Polymorphism,” *The Journal of Systems and Software*, vol. 83, no. 3, pp. 391-404, March 2010.
6. **N. Tsantalis**, and A. Chatzigeorgiou, “Identification of Move Method Refactoring Opportunities,” *IEEE Transactions on Software Engineering*, vol. 35, no. 3, pp. 347-367, May/June 2009.
7. S. T. Halkidis, **N. Tsantalis**, A. Chatzigeorgiou, and G. Stephanides, “Architectural Risk Analysis of Software Systems based on Security Patterns,” *IEEE Transactions on Dependable and Secure Computing*, vol. 5, no. 3, pp. 129-142, July-September 2008.
8. A. Chatzigeorgiou, **N. Tsantalis**, and I. Deligiannis, “An Empirical Study on Students’ Ability to Comprehend Design Patterns,” *Computers & Education*, vol. 51, no. 3, pp. 1007-1016, November 2008.
9. **N. Tsantalis**, A. Chatzigeorgiou, G. Stephanides, and S. T. Halkidis, “Design Pattern Detection Using Similarity Scoring,” *IEEE Transactions on Software Engineering*, vol. 32, no. 11, pp. 896-909, November 2006.
10. **N. Tsantalis**, A. Chatzigeorgiou, and G. Stephanides, “Predicting the Probability of Change in Object-Oriented Systems,” *IEEE Transactions on Software Engineering*, vol. 31, no. 7, pp. 601-614, July 2005.

REFEREED  
BOOK  
CHAPTERS

1. R. Mikhael, **N. Tsantalis**, N. Negara, E. Stroulia, and Z. Xing, “Differencing UML Models: A Domain-Specific vs. a Domain-Agnostic Method,” in *Generative and Transformational Techniques in Software Engineering IV*, Ralf Lämmel, João Saraiva, Joost Visser, Eds. Springer Berlin Heidelberg, 2013, pp. 159-196.

REFEREED  
CONFERENCE  
PAPERS

1. **N. Tsantalis**, D. Mazinianian, and S. Rostami, “Clone Refactoring with Lambda Expressions,” *39th International Conference on Software Engineering (ICSE’2017)*, Buenos Aires, Argentina, May 20-28, 2017. (AR: 17.1%, 68/398)
2. D. Mazinianian, and **N. Tsantalis**, “Migrating Cascading Style Sheets to Preprocessors by Introducing Mixins,” *31st IEEE/ACM International Conference on Automated Software Engineering (ASE’2016)*, Singapore, September 3-7, 2016. (AR: 19.1%, 57/298)
3. D. Silva, **N. Tsantalis**, and M. T. Valente, “Why We Refactor? Confessions of GitHub Contributors,” *24th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE’2016)*, Seattle, WA, USA, November 13-18, 2016. (AR: 27.1%, 74/273, **ACM SIGSOFT Distinguished Paper Award**)

4. D. Mazinianian, and **N. Tsantalis**, “An Empirical Study on the Use of CSS Preprocessors,” pp. 168-178, *23rd IEEE International Conference on Software Analysis, Evolution, and Reengineering* (SANER’2016), Osaka, Japan, March 14-18, 2016. (AR: 37.1%, 52/140, **Best Paper Candidate Award**)
5. D. Mazinianian, **N. Tsantalis**, and A. Mesbah, “Discovering Refactoring Opportunities in Cascading Style Sheets,” pp. 489-499, *22nd ACM SIGSOFT International Symposium on the Foundations of Software Engineering* (FSE’2014), Hong Kong, November 16-22, 2014. (AR: 22.3%, 61/273)
6. G. P. Krishnan, and **N. Tsantalis**, “Unification and Refactoring of Clones,” pp. 104-113, *IEEE Conference on Software Maintenance, Reengineering and Reverse Engineering* (CSMR-WCRE’2014), 2014 Software Evolution Week, Antwerp, Belgium, February 3-7, 2014. (AR: 31%, 27/87)
7. **N. Tsantalis**, V. Guana, E. Stroulia, and A. Hindle, “A Multidimensional Empirical Study on Refactoring Activity,” pp. 132-146, *23rd Annual International Conference of the Centre for Advanced Studies on Collaborative Research* (CASCON’2013), Toronto, Ontario, Canada, November 18-20, 2013. (AR: 34.3%, 24/70)
8. N. Negara, **N. Tsantalis**, and E. Stroulia, “Feature Detection in Ajax-enabled Web Applications,” pp. 154-163, *17th European Conference on Software Maintenance and Reengineering* (CSMR’2013), Genova, Italy, March 58, 2013. (AR: 36.2%, 29/80)
9. M. Fokaefs, R. Mikhael, **N. Tsantalis**, E. Stroulia, and A. Lau, “An Empirical Study on Web Service Evolution,” pp. 49-56, *9th IEEE International Conference on Web Services* (ICWS’2011), Washington DC, USA, July 4-9, 2011. (AR: 13.7%, 38/277)
10. **N. Tsantalis**, and A. Chatzigeorgiou, “Ranking Refactoring Suggestions based on Historical Volatility,” pp. 25-34, *15th European Conference on Software Maintenance and Reengineering* (CSMR’2011), Oldenburg, Germany, March 1-4, 2011. (AR: 28.7%, 29/101)
11. M. Fokaefs, **N. Tsantalis**, A. Chatzigeorgiou, and J. Sander, “Decomposing Object-Oriented Class Modules Using an Agglomerative Clustering Technique,” pp. 93-101, *25th IEEE International Conference on Software Maintenance* (ICSM’2009), Edmonton, Alberta, Canada, September 20-26, 2009. (AR: 21.6%, 35/162)
12. **N. Tsantalis**, and A. Chatzigeorgiou, “Identification of Extract Method Refactoring Opportunities,” pp. 119-128, *13th European Conference on Software Maintenance and Reengineering* (CSMR’2009), Kaiserslautern, Germany, March 24-27, 2009. (AR: 31.4%, 22/70)

REFEREED  
CONFERENCE  
ERA/NIER  
PAPERS

1. S. Rostami, L. Eshkevari, D. Mazinianian, and **N. Tsantalis**, “Detecting Function Constructors in JavaScript,” *32nd IEEE International Conference on Software Maintenance and Evolution* (ICSME’2016), ERA Track, Raleigh, North Carolina, USA, October 2-10, 2016. (AR: 34.1%, 14/41)
2. G. Bavota, S. Panichella, **N. Tsantalis**, M. Di Penta, R. Oliveto, and G. Canfora, “Recommending Refactorings based on Team Co-Maintenance Patterns,” pp. 337-342, *29th IEEE/ACM International Conference on Automated Software Engineering* (ASE’2014), Västerås, Sweden, September 15-19, 2014. (AR: 24.3%, 55+27/337)
3. G. P. Krishnan, and **N. Tsantalis**, “Refactoring Clones: An Optimization Problem,” pp. 360-363, *29th IEEE International Conference on Software Maintenance* (ICSM’2013) ERA Track, Eindhoven, the Netherlands, September 22-28, 2013. (AR: 42.8%, 30/70)

## Teaching & Supervision

TEACHING EXPERIENCE	Course title	Course number	Reg. Students	Offered
	Software Engineering Team Design Project	SOEN 390/4 SS	94	Winter 2017
	Software Refactoring	SOEN 6491/2 DD	31	Fall 2016
	Software Engineering Team Design Project	SOEN 390/4 SS	63	Winter 2016
	Software Refactoring	SOEN 691/2 DD	27	Fall 2015
	Software Measurement	SOEN 6611/1 AA	93	Summer 2015
	Software Engineering Team Design Project	SOEN 390/4 SS	55	Winter 2015
	Software Refactoring	SOEN 691C/2 DD	47	Fall 2014
	Object-Oriented Programming II	COMP 249/1 CC	69	Summer 2014
	Software Measurement	SOEN 6611/4 DD	32	Winter 2014
	Software Refactoring	SOEN 691C/2 DD	27	Fall 2013
	Object-Oriented Programming II	COMP 249/2 D	60	Fall 2013
	Software Measurement	SOEN 6611/4 DD	22	Winter 2013
	Object-Oriented Programming II	COMP 249/2 D	46	Fall 2012

SUPERVISED STUDENTS	Name	Role	Level	Status	Start	End
1	Tahmid Ahmad	Supervisor	Ph.D.	In Progress	Sep'16	–
2	Laleh M. Eshkevari	Supervisor	Postdoc	In Progress	Feb'16	–
3	Matin Mansouri	Supervisor	Master's	In Progress	Jan'16	–
4	Mehran Hassani	Co-supervisor	Master's	In Progress	Jan'16	–
5	Davood Mazinianian	Supervisor	Ph.D.	In Progress	May'13	–
6	Asif Al-Waqfi	Supervisor	Master's	Completed	Sep'15	Mar'17
7	Shahriar Rostami	Supervisor	Master's	Completed	Sep'14	Aug'16
8	Guo Qiao	Supervisor	Master's	Completed	Sep'13	Apr'15
9	Zackary Valenta	Supervisor	NSERC USRA	Completed	May'14	Aug'14
10	Giri Panamoottil Krishnan	Supervisor	Master's	Completed	Jan'13	Apr'14
11	Kimberly Dextras-Romagnino	Supervisor	NSERC USRA	Completed	May'13	Aug'13
12	Raphael Stein	Supervisor	NSERC USRA	Completed	May'13	Aug'13

## Service

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- PROGRAM CHAIR
- 24<sup>th</sup> IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER'2017) [Tool Demonstration]
  - 22<sup>nd</sup> IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER'2015) [ERA]
- PROGRAM COMMITTEE MEMBER
- 2017** [Track]
- IEEE/ACM International Conference on Automated Software Engineering (ASE) [Main]
  - IEEE International Conference on Software Maintenance and Evolution (ICSME) [Main]
  - IEEE International Conference on Program Comprehension (ICPC) [Main]
  - International Workshop on API Usage and Evolution (WAPI)
- 2016** [Track]
- IEEE International Conference on Software Maintenance and Evolution (ICSME) [Main]
  - IEEE International Conference on Program Comprehension (ICPC) [Main]
  - IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER) [ERA]
  - International Workshop on Software Refactoring (IWSR)
- 2015** [Track]
- International Conference on Web Engineering (ICWE) [Web user interfaces]
  - IEEE International Conference on Program Comprehension (ICPC) [Main]
  - IEEE International Conference on Program Comprehension (ICPC) [ERA]
- 2014** [Track]
- Asia-Pacific Software Engineering Conference (APSEC) [Main]
  - IEEE International Conference on Software Maintenance and Evolution (ICSME) [ERA]
  - IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM) [Main]
  - IEEE Conference on Software Maintenance, Reengineering and Reverse Engineering (CSMR-WCRE) [Main]
- 2013** [Track]
- International Conference on Software Engineering (ICSE) [Formal Research Demonstrations]
  - IEEE International Conference on Program Comprehension (ICPC) [ERA]
  - European Conference on Software Maintenance and Reengineering (CSMR) [Main]
  - IEEE International Conference on Software Maintenance (ICSM) [ERA]
- 2012** [Track]
- European Conference on Software Maintenance and Reengineering (CSMR) [Main]
  - IEEE International Conference on Software Maintenance (ICSM) [ERA]
- JOURNAL REVIEWER
- IEEE Transactions on Software Engineering (11 articles)
  - IEEE Software (2 articles)
  - IEEE Transactions on Reliability (1 article)
  - Empirical Software Engineering (6 articles)
  - Journal of Systems and Software (10 articles)
  - Information and Software Technology (4 articles)
  - Automated Software Engineering (1 article)
  - Journal of Software: Evolution and Process (5 articles)
  - Journal of Software: Practice and Experience (1 article)
  - Journal of Software Maintenance and Evolution: Research and Practice (1 article)
  - Software and Systems Modeling (2 articles)
  - Science of Computer Programming (3 articles)
  - Software Quality Journal (4 articles)
  - IEEE Transactions on Systems, Man, and Cybernetics–Part C (1 article)
  - Computational Intelligence (1 article)

EXTERNAL - NSERC Discovery Grant 2013 (2 applications)  
REVIEWER - NSERC Discovery Grant 2015 (1 application)  
- NSERC Discovery Grant 2016 (1 application)  
- NSERC Collaborative Research and Development Grant (1 application in 2015)

INVITED TALKS - “Code Smell Research: History and Future Directions,” *Second PLOW Installment*,  
École Polytechnique de Montréal, Montreal, QC, Canada, March 5, 2014.  
- “Preventive Software Maintenance: The Past, the Present, the Future,” Consortium  
for Software Engineering Research (CSER’2013) Spring Meeting, New Faculty Keynote,  
Montreal, QC, Canada, June 18, 2013.

## Awards/Distinctions

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- Our paper titled “Why We Refactor? Confessions of GitHub Contributors” received an **ACM SIGSOFT Distinguished Paper Award** and a **Distinguished Artifact Award** at FSE 2016.
- Awarded **Outstanding Reviewer Status** by the *Information & Software Technology* Journal for my Exceptional Contribution to the Quality of the Journal when Serving as Reviewer from 2014 to 2015.
- Our paper titled “An Empirical Study on the Use of CSS Preprocessors” has been selected as one of the **5 best paper candidates** for the *23rd IEEE International Conference on Software Analysis, Evolution, and Reengineering* (SANER’2016).
- Our paper titled “Assessing the Refactorability of Software Clones” was the **featured article** of the *IEEE Transactions on Software Engineering* November 2015 issue.