TUDOR DAVID

CURRICULUM VITAE

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Research Interests:

My research interests lie at the crossroads of software systems and concurrent computing. My general aim is to improve the performance and ensure the correctness of complex concurrent software systems. In particular, I am interested in doing this by leveraging changes and new technologies at an architecture level, and studying how this enables us to design software systems in new ways. My work also tries to reconcile certain differences between theoretical and practical assumptions regarding the design of concurrent applications.

Topics: Concurrent and Distributed Computing, Operating Systems, Multi-core Architectures.

Education

2012 - 2017 (expected)	**École Polytechnique Fédérale de Lausanne, (EPFL)**, Lausanne, Switzerland School of Computer and Communication Sciences PhD in Computer Science Topic: Concurrent systems in the context of modern architectures. Advisor: Prof. Rachid Guerraoui
2010-2012	**École Polytechnique Fédérale de Lausanne, (EPFL)**, Lausanne, Switzerland School of Computer and Communication Sciences MSc in Computer Science 5.63/6 GPA Thesis: Scalability and Performance of Large Scale Distributed Systems in Tacc. Advisor: Prof. Rachid Guerraoui
2006-2010	**Technical University of Cluj-Napoca**, Cluj-Napoca, Romania Department of Automation and Computer Science BSc in Computer Science 9.59/10 GPA Thesis: Ant Inspired Method for Automatic Web Service Composition and Selection. Advisor: Prof. Ioan Salomie

Experience

- **Sep 2012 - present**. Doctoral assistant.
  LPD (Distributed Programming Laboratory), EPFL, Switzerland.
  Topic: efficient concurrent programming in the context of modern architectures.
- **Summer 2016**. Research intern.
  Microsoft Research, Cambridge, UK.
  Topic: concurrent data structures for non-volatile RAM.
- **Summer 2015**. Research intern.
  VMware Research Group, Palo Alto, CA.
  Topic: design of a scalable distributed serializable transaction system.
- **Sep 2011 - Mar 2012**. Software engineering intern.
  OptumSoft Inc., Menlo Park, CA.
  Topic: large-scale key-value store using TACC, a development platform for distributed applications.
- **Summer 2011, Summer 2012**. Research intern.
  LPD (Distributed Programming Laboratory), EPFL, Switzerland.
  Topic: explicit message-passing consensus protocols in large multi-cores.
- **2008-2010**. Student research assistant.
  DSRL (Distributed Systems Research Lab) Technical University of Cluj-Napoca, Romania.
  Topic: methods for automatic web service composition and discovery using semantic information, with a focus on biologically inspired methods.
- **Summer 2009**. Research intern.
  Laboratoire de l'Informatique du Parallelisme, Ecole Normale Superieure de Lyon, France.
  Topic: modeling the computation and communication-related characteristics of a heterogeneous multi-core in the context of the development of a scheduler for streaming applications.

Publications

- Tudor David and Rachid Guerraoui. **Concurrent Search Data Structures Can Be Blocking and Practically Wait-Free**, 28th Symposium on Parallelism in Algorithms and Architectures (SPAA), Monterey, CA, 2016.
- Tudor David, Rachid Guerraoui and Vasileios Trigonakis. **Asynchronized Concurrency: The Secret to Scaling Concurrent Search Data Structures**, 20th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Istanbul, Turkey, 2015.
- Tudor David, Rachid Guerraoui and Maysam Yabandeh. **Consensus Inside**, 15th International Middleware Conference (Middleware), Bordeaux, France, 2014, **Best Paper Award**.
- Tudor David, Rachid Guerraoui and Vasileios Trigonakis. **Everything You Always Wanted to Know about Synchronization but Were Afraid to Ask**, Symposium on Operating Systems Principles (SOSP), Farmington, PA, 2013.

Selected work done during Bachelor studies:

- Tudor David, Mathias Jacquelin, and Loris Marchal. **Scheduling Streaming Applications on a Complex Multicore Platform**. Concurrency and Computation: Practice and Experience, Wiley. 24(15): 1726-1750 (2012).
- Cristina Bianca Pop, Viorica Rozina Chifu, Ioan Salomie, Mihaela Dinsoreanu, Tudor David and Vlad Acretoaie. **Semantic Web Service Clustering for Efficient Discovery Using an Ant-based Method**. 4^{th} International Symposium on Intelligent Distributed Computing (IDC), 2010.
- Cristina Bianca Pop, Viorica Rozina Chifu, Ioan Salomie, Mihaela Dinsoreanu, Tudor David and Vlad Acretoaie. **Ant-inspired Technique for Automatic Web Service Composition and Selection**. 12^{th} International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC), 2010.

Submitted/in preparation:

- Marcos K. Aguilera, Tudor David, and Rachid Guerraoui. **Locking Timestamps Versus Locking Objects**.
- Tudor David, Aleksandar Dragojevic, and Rachid Guerraoui. **Concurrent Data Structures for Non-volatile RAM**.

Achievements and Distinctions

- VMware Academic Graduate Fellowship, 2015 - 2016;
- Best paper award, ACM Middleware Conference, 2014;
- EPFL Fellowship, 2012 - 2013;
- Merit Scholarship, Technical University of Cluj-Napoca (TUCN), 2008 - 2010;
- Study Scholarship, Technical University of Cluj-Napoca (TUCN), 2006 - 2008;
- Accepted to TUCN without mandatory admission exam due to outstanding results at national competitions during high school.
- Entered about 100 Contests and Olympics in Sciences (Physics, Math, Computer Science) (2000 - 2006); 2 times second prize at the National Physics Olympiad.

Professional Service

- **Shadow PC member:** EuroSys Conference on Computer Systems 2015 (heavy PC member).

Talks

- **Lock-free data structures for non-volatile RAM**, September 2016, Microsoft Research, UK.
- **Concurrent search data structures can be blocking and practically wait-free**, at SPAA, July 2016, Pacific Grove, California;
- **Distributed transactions using adjustable serialization intervals**, VMware, 2015.
- **Consensus inside**, at the ACM Middleware Conference, December 2014, Bordeaux, France;
- **Asynchronized concurrency**, at Hot Topics in Distributed Computing (HTDC), March, 2014, La Plagne, France;
- **Everything you wanted to know about synchronization but were afraid to ask**, at Transform Summer School on Research Directions in Distributed Computing (SRDC), June, 2013, Heraklion, Greece;
- **Message-passing consensus in multi-cores**, at Hot Topics in Distributed Computing (HTDC), March 2011, La Plagne, France.

Teaching Experience

Teaching assistant:

- **Information, Calcul, Communication**, Undergraduate Course, EPFL, 2014, 2015, 2016 (in French);
- **System-Oriented Programming**, Undergraduate Course, EPFL, 2014, 2015 (in French);
- **Concurrent Algorithms**, Graduate Course, EPFL, 2013 - 2014 (in English);
- **Programmation II**, Undergraduate Course, EPFL, 2013 (in French);
- **Mathematiques II**, Undergraduate Course, UNIL, 2016 (in French);
- **Mathematiques - Mise à niveau**, Undergraduate Course, EPFL, 2017 (in French).

Lecturing:

- **Concurrent Algorithms**, Graduate Course, EPFL, 2016 - taught several lectures.

Mentoring

- **Junxiong Wang**. Graduate student. MSc. thesis.
  Logical Interval-based Distributed Transaction System, Feb. - Jun. 2017;
- **Quentin Laville**. Graduate student. Semester project.
  ASCYLIB-wf: Enhancing ASCYLIB With Wait-free Algorithms, Sept. 2016 - Jan. 2017;
- **Egeyar Bacioglu**. Graduate student. MSc. thesis.
  Using Hardware Transactional Memory in Concurrent Data Structures., Feb. - Jun. 2016;
- **Alexandru Ciprian Farcasanu**. Graduate student. Semester project.
  gcmalloc: Memory Allocation with Garbage Collection, Sept. 2015 - Jan. 2016;
- **Egeyar Bacioglu**. Graduate student. Semester project.
  Implementing Randomized Concurrent Data structures, Feb. - Jun. 2015;
- **Radmila Popovic**. Undergraduate student. Research internship.
  Cross-platform Implementations of Reader-Writer Locks, Jun. - Aug. 2014;
- **Chengzhen Wu**. Graduate student. Semester project.
  Cross-platform Implementations of Barrier Algorithms, Feb. - Jun. 2014;
- **Oana Balmau and Igor Zablotchi**. Graduate students. Semester projects.
  Increasing the Concurrency of RocksDB, Feb. - Jun. 2014
  Concurrent Binary Search Trees on Many-cores., Sept. 2013 - Jan. 2014;
- **Ugur Gurel**. Graduate student. Research internship.
  Designing Scalable Concurrent Hash Tables, Sept. 2012 - Feb. 2013.

Software projects

- ASCYLIB (github.com/LPD-EPFL/ASCYLIB): a concurrent data structure library;
- libslock (github.com/tudordavid/libslock): a portable lock algorithm library;
- ConsensusInside (github.com/LPD-EPFL/consensusinside): message-passing consensus for multi-cores.

Languages

- **English:** fluent; **French:** good; **German:** basic; **Romanian:** native.

References

- **Rachid Guerraoui**, Full Professor, School of Computer and Communication Sciences, EPFL;
- **Marcos K. Aguilera**, Senior Researcher, VMware Research Group;
- **Aleksandar Dragojevic**, Researcher, Microsoft Research, Cambridge, UK.

Updated on February 10, 2017.