

Laurent Bindschaedler

POSTDOCTORAL FELLOW AT COMPUTER SCIENCE AND AI LAB · MIT

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Summary

I am a Postdoctoral Fellow at MIT working with Prof. Tim Kraska. I recently completed my Ph.D at EPFL, Switzerland, advised by Prof. Willy Zwaenepoel. I build systems for big data and machine learning, and use machine learning to improve systems. I have been obsessed with software architecture and systems design since I was 12. I also enjoy teaching, entrepreneurship, and improvisational theatre.

Education

EPFL (Ecole Polytechnique Fédérale de Lausanne)

Lausanne, Switzerland

PH.D. IN COMPUTER SCIENCE

Sep. 2015 – Sep. 2020

- Ph.D. Thesis: An Architecture for Load Balance in Computer Cluster Applications. Supervised by Prof. Willy Zwaenepoel.
- Viva voce passed on March 19, 2020.
- 30 ECTS credits. Depth area: Systems.
- Classes: Principles of Computer Systems (CS-522), Applied Data Analysis (CS-401), Natural Language Processing (CS-431).

EPFL (Ecole Polytechnique Fédérale de Lausanne)

Lausanne, Switzerland

M.S. IN COMPUTER SCIENCE

Sep. 2009 – Jun. 2011

- GPA: 5.54 (out of 6). 125 ECTS credits.
- M.S. Thesis: Track Me If You Can. Hosted by: Nokia Research Center. Supervised by Prof. Jean-Pierre Hubaux.

EPFL (Ecole Polytechnique Fédérale de Lausanne)

Lausanne, Switzerland

B.S. IN COMPUTER SCIENCE

Sep. 2006 – Jun. 2009

- GPA: 5.59 (out of 6). 189 ECTS credits.
- B.S. Thesis: Secure SMS. Supervised by Prof. Jean-Pierre Hubaux.

Employment History

MIT (Massachusetts Institute of Technology)

Cambridge, MA, USA

POSTDOCTORAL FELLOW

Sep. 2020 –

- Data Systems and AI Lab (DSAIL), Computer Systems and AI Lab (CSAIL). Prof. Tim Kraska.
- Projects: Interactive Graph Pattern Mining, Learned Data Management Systems.

EPFL (Ecole Polytechnique Fédérale de Lausanne)

Lausanne, Switzerland

DOCTORAL ASSISTANT

Sep. 2015 – Sep. 2020

- Ph.D. Candidate in the Operating Systems Laboratory (LABOS), IC. Supervised by Prof. Willy Zwaenepoel.
- IT administrator for the laboratory (since 2018), in charge of support, maintenance, and purchases.

EPFL (Ecole Polytechnique Fédérale de Lausanne)

Lausanne, Switzerland

RESEARCH ASSISTANT

Jul. 2013 – Aug. 2015

- Operating Systems Laboratory (LABOS), IC. Prof. Willy Zwaenepoel.
- Technical coordinator for the Data Center Observatory, a small state-of-the-art data center for researchers at EPFL, ETHZ, and USI.
- Co-designer and developer on Chaos, a graph processing system that enables analytics on very large graphs using secondary storage.
- Maintainer of X-Stream, a single-machine graph processing system based on streaming partitions.

LakeMind

Lausanne, Switzerland

CO-FOUNDER AND VP OF ENGINEERING

Aug. 2011 – Jun. 2013

- LakeMind makes cloud services more reliable by automatically troubleshooting and repairing service outages. As a result, the duration of service downtimes is drastically reduced and developers spend less time fixing problems.
- LakeMind was an incubating company at EPFL in LABOS and NAL, supported by an Innovation Grant and Venture Kick.
- I designed and implemented the software stack for LakeMind consisting of an event processing pipeline, distributed in-memory dependency graph data structures, and several signal processing and machine learning algorithms. My responsibilities also involved coordinating the software development efforts involving several interns and business development in Europe and the US.
- Cloud service troubleshooting was too early to gain traction in its market segment and we did not attract the venture capital required to develop a minimum viable product. Recently, this market segment has seen significant activity.
- The two co-founders retain full ownership of the Intellectual Property and software developed.

LCA1, EPFL & Nokia Research Center

Lausanne, Switzerland

PART-TIME INTERN

May. 2009 – Jul. 2011

- Designed and implemented the prototype for a location privacy-preserving service for smartphones, which was a key component in the Nokia-EPFL NIC Trial that took place in 2011 and involved ~ 100 participants for 4 months.
- Demonstrated and published practical attacks on context-based identifier changes in such mobile networks.

Swiss Armed Forces

Morges, Switzerland

IT PIONEER

Jul. 2006 – Dec. 2018

- Assigned to the Chief of Staff - 1st Army Region.

Supervision of Students

Master Semester Projects

MARIO BUCEV

Spring 2019

- Ph.D. Supervisor. Professor: Willy Zwaenepoel.
- Project: Graph Ingestion Engine for Evolving Graphs.

DIEGO ANTOGNINI

Spring 2016

- Ph.D. Supervisor. Professor: Willy Zwaenepoel.
- Project: Scalable Decentralized Storage System Design.

VLAD HAPRIAN

Spring 2016

- Ph.D. Supervisor. Professor: Willy Zwaenepoel.
- Project: Load Balancing Techniques for Chaos.

Summer Internship Project

JUNYAO ZHAO

Summer 2015

- Supervisor. Professor: Willy Zwaenepoel.
- Project: HDFS Support for X-Stream.

Teaching Activities

EPFL, Real-time Systems (CS-321)

Lausanne, Switzerland

GUEST LECTURER

Fall 2019

- Undergraduate level, ~ 50 students. Taught in French.
- Gave a 1-hour lecture on ContikiOS and protothreads.

EPFL, Operating Systems Introduction (CS-323)

Lausanne, Switzerland

GUEST LECTURER

Spring 2018, Spring 2019

- Undergraduate level, ~ 100 students. Taught in English.
- Gave a 2-hour lecture on Virtual Machines.

EPFL, Real-time Systems (CS-321)

Lausanne, Switzerland

TEACHING ASSISTANT

Fall 2019

- Undergraduate level, ~ 50 students. Taught in French.
- Head Teaching Assistant.
- Designed and led lab sessions.

EPFL, Operating Systems Introduction and Implementation (CS-323 & CS-323a)

Lausanne, Switzerland

TEACHING ASSISTANT

Spring 2017, Spring 2018, Spring 2019

- Undergraduate level, ~ 100 students in Introduction class, ~ 30 students in Implementation class. Taught in English.
- Part of a team of 4 Ph.D. Teaching Assistants.
- Led exercise and answers sessions, graded exams, and held office hours in the Introduction class.
- Designed and graded 4 mini-projects in the Implementation class.

EPFL, Calculus III (MATH-203)

Lausanne, Switzerland

TEACHING ASSISTANT

Fall 2018

- Undergraduate level, ~ 300 students. Taught in French.
- Part of a team of 4 Ph.D. Teaching Assistants coordinating ~ 20 undergraduate TAs.
- Led exercise and answers sessions, graded exams, and held office hours.

EPFL, Information, Computation, Communication (CS-119)

Lausanne, Switzerland

TEACHING ASSISTANT

Fall 2016, Fall 2017

- Undergraduate level, ~ 200 students. Taught in French.
- Part of a team of 4 Ph.D. Teaching Assistants coordinating ~ 20 undergraduate TAs.
- Designed and graded exams, led exercise and answers sessions, held office hours.

EPFL, System Oriented Programming (CS-207)

Lausanne, Switzerland

TEACHING ASSISTANT

Spring 2016

- Undergraduate level, ~ 150 students. Taught in French.
- Head Teaching Assistant coordinating 8 undergraduate TAs.
- Designed and graded exercises, projects, and exams.

EPFL, Various Undergraduate Classes

Lausanne, Switzerland

STUDENT TEACHING ASSISTANT

Fall 2009 - Spring 2011

- Information Technology (French), Systems Programming (English), and Software Engineering (English).
- Designed and graded exercises. Answered questions during exercise sessions.

Professional Service

Sep. 2020 **Reviewer**, ACM Transactions on Computer Systems (TOCS)

Jul. 2020 **External Reviewer**, USENIX Annual Technical Conference

Boston, USA

Apr. 2020 **Organizer and PC Chair**, 1st European Workshop on Graph Processing Systems

Heraklion, Greece

Feb. 2018 **External Reviewer**, Principles and Practice of Parallel Programming

Vienna, Austria

Prizes, Awards, Fellowships

May. 2020 **Early Postdoc.Mobility: P2ELP2_195136**, Swiss National Science Foundation

Mar. 2020 **Best Video Award**, ASPLOS'20

Dec. 2017 **Teaching Assistant Award**, EPFL IC Faculty

Dec. 2017 **Public Prize Winner**, Exposure Science Movie Hackathon

Sep. 2015 **Ph.D. Fellowship**, EPFL EDIC

Jan. 2012 **Venture Kick 1st Round**, LakeMind

Talks

Mar. 2020	Hailstorm , Disaggregated Compute and Storage for Distributed LSM-based Databases	<i>ASPLOS'20</i>
Oct. 2019	Tesseract , Fast, Scalable Graph Pattern Mining on Evolving Graphs	<i>U. Toronto</i>
May. 2019	Tesseract , Fast, Scalable Graph Pattern Mining on Evolving Graphs	<i>EcoCloud'19</i>
Jun. 2018	Rock You Like a Hurricane , Taming Skew in Large Scale Analytics	<i>EcoCloud'18</i>
Apr. 2018	Rock You Like a Hurricane , Taming Skew in Large Scale Analytics	<i>EuroSys'18</i>
Oct. 2015	Chaos , Scale-out Graph Processing from Secondary Storage	<i>SOSP'15</i>
Jul. 2012	LakeMind , Making Cloud Service More Reliable	<i>VentureKick'12</i>
Jan. 2012	Track Me If You Can , on the Effectiveness of Context-based Identifier Changes in Mobile Networks	<i>NDSS'12</i>
Sep. 2011	ARLO , Making Mobile Augmented Reality a Reality	<i>MobileHCI'11</i>

Language Skills

- French **Fluent**, Mother tongue
- English **Fluent (C2)**, Cambridge Certificate of Proficiency
- German **Basic Knowledge (B2)**, Zertifikat Deutsch

Personal Skills / Hobbies

Improvisational Theatre

FOUNDING MEMBER OF L'IMPROSTURE, AN IMPROV TEAM ACTIVE IN FRENCH-SPEAKING SWITZERLAND

Chess

JUNIOR CHESS PLAYER IN THE GENEVA CHESS CLUB. ELO-RATED. HOBBYIST TO THIS DAY.

Piano

CLASSICAL AND POP PLAYER.