

# Sébastien M. R. Arnold

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## Education

**University of Southern California** **August 2017 - Present**

**Ph.D. Computer Science**

Under the supervision of Prof. Fei Sha. Research topic: Optimization and Reinforcement Learning.

**University of Southern California** **August 2014 - August 2017**

**BS. Computer Science & BA. Mathematics (with honors)**

CS honors society member & Society of Women in Engineering member.

**ETH Zürich** **September 2011 - August 2013**

**BS. Computer Science (dropout)**

German-based instruction, advanced class in parallel and distributed computing, machine learning project with Yuxin Chen, PhD student of Prof. Andreas Krause.

**Stanford University** **June 2011 - August 2011**

**High-School Summer Semester**

Opportunity for high-school students to take undergraduate classes.

**Gymnase Auguste-Piccard** **August 2008 - August 2011**

**Maturité Fédérale**

High-school degree, with an emphasis on Mathematics and Physics.

## Research Experience

**Theoretical and Empirical Data Science Lab - USC** **August 2017 - Present**

**Doctoral Student - Advisor: Prof. Fei Sha**

Research topic: Optimization and Reinforcement Learning.

**Brain-Body Dynamics Lab - USC** **July 2016 - August 2017**

**Undergraduate Researcher - Advisor: Prof. Francisco Valero-Cuevas**

Investigating deep reinforcement learning algorithms for simulated, robotic, and cadaveric hand control.

**Simulation and Modelling Lab - USC****April 2016 - August 2017****Undergraduate Researcher - Advisor: Prof. Chunming Wang**

Investigating second order optimization methods for distributed deep learning.

**Information Science Institute - USC****January 2015 - December 2015****Research Assistant - Advisor: Prof. Greg Ver Steeg**

Research in quantum optimization of Ising models, and quantum machine learning within the group of Prof. Dr. Daniel Lidar.

**Computational Social Science - ETHZ****June 2012 - January 2014****Research Assistant - Advisor: Dr. Stefano Balietti**

Development of sociological experiments with JavaScript and PHP. Project received appraisal from the European Commission and fundings for coming years.

**Industry Experience****Nervana Systems****August 2015 - August 2016****Algorithm Intern - Advisor: Dr. Arjun Bansal**

Development of distributed deep learning library and project in distributed deep reinforcement learning.

**Schneeberger AG****May 2014 - November 2014****Lead Developer**

Development of a financial management tool for an international usage. Engineering leader in a team of 4.

**Tooski****January 2009 - Present****Founder**Development of the leading French-speaking skiing website, and its magazine *Angulation*.**Writings****Writing Distributed Applications with PyTorch** S. Arnold, 2017, PyTorch Tutorials**Shapechanger: Environments for Transfer Learning** S. Arnold, T.K. Pun, T.J. Denisart, F.J. Valero-Cuevas, 2017, SoCal Robotics Symposium**Accelerating SGD for Distributed Deep Learning Using an Approximated Hessian Matrix** S. Arnold, C. Wang, 2017, ICLR Workshop

**A Performance Comparison between TRPO and CEM for Reinforcement Learning** *S. Arnold, E. Chu, F. Valero-Cuevas*, 2016, SoCal ML Symposium

**A Greedy Algorithm to Cluster Specialists** *S. Arnold*, Technical Report, 2016, Arxiv Preprint

## **Presentations**

**Managing Machine Learning Experiments** *S. Arnold*, Poster, 2018, PyCon18 (to be presented)

**Managing Machine Learning Experiments** *S. Arnold*, Talk, 2018, Fund3 - Hong Kong

**Optimization and Policy Gradients** *S. Arnold*, Talk, 2017, Fund3 - Los Angeles

## **Press Coverage**

**The Quest To Make A Robotic Cat Walk with Artificial Neurons** *M. Simon*, WIRED, March 2018

## **Awards**

- **USC Senior Award for Excellence in Mathematics**: Honorable Mention
- **USC Undergraduate Research Project**: 2<sup>nd</sup> Place in Mathematics, Physics, and Engineering
- **David Wiesen Scholarship**: 2016
- **USC Summer Undergraduate Research Fellowship**: 2016
- **Microsoft Tuition Scholarship**: Finalist, 2016
- **USC Academic Achievement Award**: 2015, 2016
- **USC Provost Research Fellowship**: 2015, 2016
- **USC Dean's List**: 2014, 2015, 2016
- **HackSC Winner - Microsoft Category**: 2014

## **Languages**

- **Bilingual**: French, Italian
- **Proficient**: English, German
- **Basic**: Spanish

## **Interests**

- **Ski**: Throughout my highschool and part of my university studies, I was lucky to race across the Alps on the FIS circuit with the best regional Swiss skiers. This longstanding passion spawned Tooski, and I was once ranked among the best 2'000 racers worldwide.
- **Mathematics**: I am generally interested in mathematics, and more specifically in optimization and stochastic models. I like to apply them to all kinds of problems, especially the ones related to artificial intelligence.
- **Computing**: I have been programming since the age of 14, and have studied different computational hardwares such as GPUs, D-Wave, and HPC Clusters.