Pascal Sturmfels

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Work Experience

Deep Learning Researcher
University of Michigan
September 2017 – May 2018

- Developed a novel CNN architecture to predict age from 3D structural MRI, which reduced per-patient loss by over 15% and training time by over 30%
- Developed the first robust, CNN-based pipeline to segment brains from fetal fMRI image; the pipeline is orders of magnitude faster than hand-labeling fetal images.

Software Engineering Intern
Microsoft, Redmond
May 2017 – July 2017

- Implemented a Spark Pipeline to simulate concurrent, high-intensity SQL queries to stress-test client-facing SQL databases
- Designed a modular system to automatically monitor and scale Azure SQL databases, reducing our organization's usage expenditure by up to 30%

Mobile Developer
University of Michigan, Ann Arbor
January 2016 – December 2016

- Developed a peer-to-peer communication app that is resilient to censorship and network blocking
- Designed and implemented protocols to simulate mesh-networking using the iOS Multipeer Connectivity framework

Algorithms Researcher
University of Maryland, College Park
June 2016 – August 2016

- Designed a general, online framework to improve approximation ratio of scheduling algorithms in multiple settings
- Developed the first exponential-time algorithm to optimally solve a certain scheduling problem

Computational Biology Researcher
University of California, Berkeley
May 2015 – July 2016

- Developed data visualization tools for next-generation sequencing software
- Designed pachterlab.github.io/lair/, which automatically analyzes and serves data from published papers

Education

Current — **PhD in Computer Science**
University of Washington, Seattle

Dec. 2017 — **BSE in Computer Science**
Minor in Mathematics
4.0/4.0
University of Michigan, Ann Arbor
EECS Scholar
James B. Angell Scholar

Courses — *Machine Learning*
Natural Language Processing
Computer Vision
Game Development
Design and Analysis of Algorithms

Personal and School Work

Teaching Assistant
University of Washington
September 2017 – Current

- CSE 546: Machine Learning

Teaching Assistant
University of Michigan
January 2017 – December 2017

- EECS 445: Machine Learning
- EECS 376: Theory of Computation

Publications

[1] S. Khuller, J. Li, P. Sturmfels, K. Sun, and P. Venkat. "Select and Permute: An Improved Online Framework for Scheduling to Minimize Weighted Completion Time". In: *ArXiv e-prints* (Apr. 2017). arXiv: 1704.06677 [cs.DS].

[2] Harold Pimentel, Pascal Sturmfels, Nicolas Bray, Pall Melsted, and Lior Pachter. "The Lair: a resource for exploratory analysis of published RNA-Seq data". In: *BMC Bioinformatics* 17.1 (2016), p. 490. ISSN: 1471-2105. DOI: 10.1186/s12859-016-1357-2.

[3] Pascal Sturmfels, Saige Rutherford, Mike Angstadt, Mark Peterson, Chandra Sripada, and Jenna Wiens. "A Domain Guided CNN Architecture for Predicting Age from Structural Brain Images". In: *arXiv preprint arXiv:1808.04362* (2018).