

## Expertise

Machine Learning, Bioinformatics

## Education

- 2013–2017 **PhD, Bioinformatics and Systems Biology**, *University of California, San Diego*, La Jolla, CA.
- 2009–2012 **MS, Computer Science and Engineering**, *The Ohio State University*, Columbus, OH.  
**Thesis:** *Application of biclustering algorithms to gene expression data.*
- 2004–2009 **BS, Biology**, *University of Michigan*, Ann Arbor, MI.  
**Minors:** Mathematics and Computer Science.

## Honors and Awards

- 2013–2016 **NIH National Library of Medicine Biomedical Informatics Training Grant Fellowship.**

## Experience

- 2018–2020 **Deep Learning Engineer**, *UPMC*, Pittsburgh, PA.  
○ Deep learning models for predicting medical outcomes.
- 2017–2018 **Senior Machine Learning Research Engineer**, *Qeexo*, Pittsburgh, PA.  
○ Machine learning-based solutions for mobile devices and embedded platforms.  
○ Developed a research project to commercialization.
- 2013–2017 **Doctoral Candidate**, *UCSD Bioinformatics and Systems Biology*, San Diego, CA.  
**Adviser:** Joel Wertheim.  
○ Statistical and computational models for viral sequence analysis.
- Summer **Software Engineer**, *scikit-learn*.  
2013 **Mentors:** Vlad Nicolae, Gaël Varoquaux.  
○ Funded by the Google Summer of Code.  
○ Implemented high-performance biclustering algorithms: Spectral Coclustering and Spectral Biclustering.  
○ Implemented biclustering scoring metrics.
- 2012–2013 **Software Engineer**, *Heidelberg Collaboratory for Image Processing*, Heidelberg, Germany.  
**Supervisor:** Fred Hamprecht.  
○ Image processing algorithms and software.  
○ Developed object classification for the ilastik interactive learning and segmentation toolkit.

2009–2012 **Graduate Research Assistant, OSU HPC Laboratory**, Columbus, OH.

**Adviser:** Ümit V. Çatalyürek.

- Developed BiBench, a framework for validation of biclustering algorithms on simulated and real microarray datasets.
- Studied and updated the Correlated Patterns Biclustering (CPB) algorithm.
- Developed algorithms for sequence mapping using the Burrows Wheeler Transform on graphical processing units.

Summer **Software Engineer, Machine Intelligence Research Institute.**

2009 **Mentor:** Lucio de Souza Coelho.

- Funded by the Google Summer of Code.
- Contributed to OpenBiomind, an open source machine learning toolkit.
- Implemented denoising, features selection, and classification algorithms for block-related fMRI experimental data.

2008-2009 **Research Assistant, Strategic Reasoning Group**, Ann Arbor, MI.

**Adviser:** Michael P. Wellman.

- Developed an autonomous agent (MANX) for the Trading Agent Competition Market Design Challenge.
- Development and testing for for the Trading Agent Competition Ad Auction Challenge.

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## Expertise

Statistics statistical learning, Bayesian modeling, hidden Markov models, Kalman filters.

CS machine learning, deep learning, image processing, optimization.

Bioinformatics SMRT sequence analysis, phylogenetics, gene expression analysis, pipeline design.

Programming Python (PyTorch, TensorFlow, NumPy, SciPy, pandas, scikit-learn, etc.), Cython, Julia, STAN, C, R, Lisp, UNIX shell scripting, T<sub>E</sub>X, GNU make, git, and others.

Parallel CUDA, MPI, OpenMP, multiprocessing.