

Andrew D Zaharia, PhD

DATA SCIENTIST · COMPUTATIONAL NEUROSCIENTIST

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Summary

Data scientist with 13+ years of applied research experience. Seeking to leverage my background in neural networks and machine learning to build products with broad and ethical impact. Curious by nature, enjoy learning new skills and communicating with the technical and nontechnical alike.

Relevant Experience

Columbia University, Visual Inference Lab

New York, NY

ASSOCIATE RESEARCH SCIENTIST
POSTDOCTORAL RESEARCH SCIENTIST

February 2020 - present
February 2018 - February 2020

- Developed a novel, general, [open-source](#) dimensionality-reducing visualization method for labeled big data using hyperspheres (MATLAB & Python).
- Developed a statistical inference module (hypothesis testing and confidence intervals) for relationships among sets of hyperspherical distributions.
- Developing an unsupervised variational autoencoder [architecture](#) and statistical model to improve performance and reliability to adversarial attack.
- Developing a novel, brain-inspired neural network architecture based on biological feature map organization.
- Leading a project to visualize how neural networks and visual brain areas progressively decode the identities of objects in images.
- Mentored a PhD student and a visiting Master's student (and served on their thesis defense committee). Presented and published at 2 conferences.

New York University, Lab for Computational Vision & Visual Neuroscience Lab

New York, NY

POSTDOCTORAL RESEARCH ASSOCIATE
GRADUATE RESEARCH ASSISTANT

November 2016 - February 2018
September 2010 - September 2016

- Increased throughput up to 121x in visual motion experiments by designing novel stimuli using Fourier analysis and computer vision techniques.
- Fit hundreds of latent variable models (MATLAB) of visual motion computation to 10,000-20,000 dimensional experimental data on a cluster.
- Improved the leading theoretical model of visual motion to be able to fit and predict decades of disparate data for the first time.
- Presented and published at 5 conferences, and won a travel award.

University College London, Cortexplab

London, UK

RESEARCH ASSISTANT

December 2008 - August 2010

- Developed interactive software applying dimensionality reduction, time-series and clustering analysis for large-scale neural data signal processing.
- Implemented a highly cited mouse behavioral training method and probabilistic generalized linear model (GLM) predicting mouse choice behavior.
- Developed a graphical interface and logic program for real-time analysis and control of multiple simultaneous mouse behavioral experiments.
- Presented and published at 2 conferences.

Harvard Medical School, Born Lab

Boston, MA

RESEARCH ASSISTANT II

January 2007 - August 2008

- Built a relational (SQL) database to standardize and centralize years of experimental data.

Boston University, Cognitive & Neural Systems

Boston, MA

MASTER'S THESIS

January 2006 - January 2007

- Developed a neural network model of visual motion computation in area MT resulting from end-stopping in primary visual cortex.
- Implemented various neural networks and machine learning-related models of vision, memory, and learning.

Education

New York University

New York, NY

PHD, COMPUTATIONAL NEUROSCIENCE (GPA 3.9/4.0)

September 2010 - September 2016

Boston University

Boston, MA

MA, COGNITIVE & NEURAL SYSTEMS (GPA 3.9/4.0)

January 2006 - January 2007

Boston University

Boston, MA

BA, BIOLOGY WITH SPECIALIZATION IN NEUROSCIENCE, MINOR IN MATHEMATICS — GRADUATED CUM LAUDE

September 2002 - January 2007

- Activities: President, Treasurer of BU Outing Club. Vice President of Democracy Matters, a nonpartisan advocacy group for campaign finance reform.

Skills

- Programming and analysis: Python, NumPy, PyTorch, scikit-learn, pandas, git, ggplot2, seaborn, MATLAB, Java, Slurm/PBS, and Unix shell scripting.
- Web technologies: SQL, Amazon Web Services (AWS), Javascript, Node.js, HTML, CSS, PHP, and WordPress.
- Applications: Adobe Illustrator, Photoshop, and LaTeX.