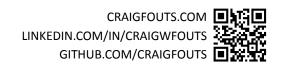
# **Craig Fouts**



I am an enthusiastic **scientist/engineer** interested in building mathematical descriptions of living systems and studying the dynamics of emergent behavior in the context of biomedical data.

#### **EDUCATION**

#### **Columbia University | MSc**

**Applied Mathematics** 

2022 - 2023

Completed a graduate research internship in the Tech Innovation Lab at the New York Genome Center.

The Ohio State University | BSc

**Computer Science & Mathematics** 

2018 - 2022

Received honors research distinction for research and publication in collaboration with Google Research.

#### **EXPERIENCE**

## Uppsala University | Department of Immunology, Genetics, and Pathology Computational Research Engineer

Oct 2024 -

Developing a nonparametric topic model called PriorLDA that identifies anatomical structures and pathologies in single-cell datasets based on gene expression profile and spatial distribution. Using a mixture-of-finite-mixtures approach, the model estimates the number of spatially relevant topics for semantic segmentation.

## New York Genome Center | Technology Innovation Laboratory

**Associate Computational Biologist II** 

Feb 2024 - Sep 2024

**Graduate Research Assistant** 

Sep 2022 - Dec 2023

Developed a probabilistic dimensionality reduction model called sceLDA that clusters anatomical structures in histological spinal cord datasets based on cell type composition and spatial distribution. The model is part of a spatial transcriptomics pipeline that repurposes Illumina HiSeq 2500s as accessible imaging platforms.

## The Ohio State University | Translational Data Analytics Institute Student Research Assistant

Aug 2021 – Sep 2022

Developed a computational pipeline for aggregating and analyzing multimodal data collected from environmental sensors used to study the effects of aircraft combustion engines in urban neighborhoods. The pipeline uses dynamic time warping to align several data streams based on location and ambient wind conditions.

#### **ACCOLADES**

#### **Honors**

The Ohio State University: Magna Cum Laude   Honors Research Distinction	2022
Granville High School: Cum Laude Society   National Honor Society   Sociedad Honoraria Hispánica	2017
Scouting America: Fagle Scout	2016

#### **Competitions**

HackOHI/O Hackathon: 1st Place Grand Prize   Microsoft Challenge Winner   People's Choice Award	2021
Ohio State FEH Honors Robotics Competition: 2nd Place Outstanding Achievement in Innovation	2019
OMEA Solo & Ensemble: Rank 1 Class A Violin Solo Performance	2016 & 2017

COURSEWORK		
Columbia University		
Applied Statistics III (A), Machine Learning for Functional Genomics (A), Advanced Linear Algebra (A+)	2023	
Numerical Algebra & Optimization (A), Partial Differential Equations (A-)	2022	
The Ohio State University		
Discrete Mathematical Models (A), Quantitative Neuroscience (A), Computer Networking (A)	2022	
Mathematical Statistics II (A), Advanced Artificial Intelligence (A), Programming Languages (A)	2021	
Data Structures & Algorithms (A), Experimental Physics (A), Intermediate Mechanics (A-)	2020	
Ordinary Differential Equations (A), Honors Physics Electricity & Magnetism (A)	2019	
Honors Real Analysis (A), Honors Psychology (A)	2018	

### **PUBLICATIONS**

## **Growing Steerable Neural Cellular Automata**

Ettore Randazzo, Alexander Mordvintsev, **Craig Fouts** (2023). *Growing Steerable Neural Cellular Automata*. Proceedings of ALIFE 2023: The 2023 Conference on Artificial Life. <a href="https://doi.org/10.1162/isal\_a\_00564">https://doi.org/10.1162/isal\_a\_00564</a>

## **Growing Isotropic Neural Cellular Automata**

Alexander Mordvintsev, Ettore Randazzo, **Craig Fouts** (2022). *Growing Isotropic Neural Cellular Automata*. Proceedings of ALIFE 2022: The 2022 Conference on Artificial Life. <a href="https://doi.org/10.1162/isal\_a\_00552">https://doi.org/10.1162/isal\_a\_00552</a>