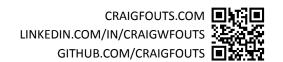
# Craig Fouts



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

#### **EDUCATION**

#### Columbia University | MSc

**Applied Mathematics** 

2022 - 2023

The Ohio State University | BSc

**Computer Science & Mathematics** 

2018 - 2022

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

Received honors research distinction for research and publication completed with Google Research.

#### **EXPERIENCE**

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

Oct 2024 - Present

Developing mathematical models and statistical machine learning tools that facilitate genomics research using single-cell and spatial transcriptomics data. Current work involves designing a probabilistic topic model for identifying disease states in single-cell datasets based on gene expression and spatial distribution.

## 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 dimension reduction model called sceLDA that clusters anatomical structures in single-cell spinal cord datasets based on cell type composition and spatial distribution. The model is part of a novel transcriptomics pipeline called Hudson that repurposes Illumina HiSeq 2500 sequencers as accessible immunofluorescent 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 on urban neighborhoods. The pipeline was used to align multiple temporal data streams based on geographic location and ambient wind conditions.

#### **PUBLICATIONS**

#### **Growing Steerable Neural Cellular Automata**

Ettore Randazzo, Alexander Mordvintsev, Craig Fouts. July 24-28, 2023. "Growing Steerable Neural Cellular Automata." Proceedings of the ALIFE 2023: The 2023 Conference on Artificial Life. https://doi.org/10.1162/isal a 00564

#### **Growing Isotropic Neural Cellular Automata**

Alexander Mordvintsev, Ettore Randazzo, Craig Fouts. July 18-22, 2022. "Growing Isotropic Neural Cellular Automata." Proceedings of the ALIFE 2022: The 2022 Conference on Artificial Life. https://doi.org/10.1162/isal\_a\_00552

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#### 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
Boy Scouts of America: Eagle 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

## **Scholarships**

Battelle Memorial Institute Full Tuition Award | Honors Engineering Research Award | Ohio State Maximus Award | Ohio State Mankoff Engineering Award | Raymond H. and Beryl Dean Penick Memorial Award

### 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-)			
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		

2020

2019

2018

Data Structures & Algorithms (A), Experimental Physics (A), Intermediate Mechanics (A-)

Ordinary Differential Equations (A), Honors Physics Electricity & Magnetism (A)

Honors Real Analysis (A), Honors Psychology (A)