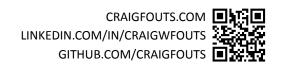
Craig Fouts



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

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 -

Developing mathematical models and machine learning tools that facilitate genomics research using single-cell and spatial transcriptomics data. Current work involves building a nonparametric topic model for identifying pathologies 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 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 2500 sequencers.

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 data streams based on location and wind conditions.

PUBLICATIONS

Growing Steerable Neural Cellular Automata

Ettore Randazzo, Alexander Mordvintsev, & Craig Fouts. 24 – 28 July 2023. "Growing Steerable Neural Cellular Automata." Presented at ALIFE 2023. https://doi.org/10.1162/isal a 00564

Growing Isotropic Neural Cellular Automata

Alexander Mordvintsev, Ettore Randazzo, & Craig Fouts. 18 – 22 July 2022. "Growing Isotropic Neural Cellular Automata." Presented at ALIFE 2022. https://doi.org/10.1162/isal_a_00552

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Honors

The Ohio State University: Magna Cum Laude Honors Research Distinction		
Granville High School: Cum Laude Society National Honor Society Sociedad Honoraria Hispánica	2017	
Scouting 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+) 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)