# Joseph Campbell

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## Education

**Georgia Institute of Technology** Expected graduation May 2025
Bachelor of Science in Computer Science GPA: 3.96/4.0
Bachelor of Science in Mathematics
**Budapest Semesters in Mathematics (BSM)** Summer 2024
Advanced courses in Topology, Graph Theory, and Combinatorics GPA: 4.0/4.0

## Experience

**Georgia Tech Research Institute** May - August 2022, January - August 2023
Cloud Development Co-op, CIPHER/SIS CED Team

- Updated software binaries in AWS S3 for desktop apps and rewrote relevant Ansible processes.
- Automated procedure for extracting .msp files for future Office Suite patching using Powershell.
- Debugged AppLocker group policies and revised GPOs to reflect new software updates.
- Applied updated STIGs for Office Suite and validated current hardening processes.
- Wrote and consolidated documentation for above updating/patching processes for future usage.

## Research and Projects

**Unit Distance Graph Research, BSM** May 2024 - Present

- Worked on an existing team from the Renyi Institute on Erdös' unsolved problem on UDGs.
- Wrote GPU-optimized Python scripts using PyTorch and KeOps to aid searching processes.
- Helped develop an innovative approach using genetic algorithms alongside beam search.

**Vertically Integrated Project, Georgia Tech** August 2023 - Present

- Worked on the Extreme Events team to simulate effects of disasters on key infrastructure.
- Gathered and cleaned ground acceleration data from the 2023 Turkey earthquake and aftershocks.
- Wrote parallelized MATLAB scripts to run on TACC Frontera supercomputer on earthquake data.

**Music Genre Classification, CS 4641, Georgia Tech** October - December 2023

- Analyzed dataset of 1700 spectrograms of English songs across 16 distinct genres and subgenres.
- Evaluated performance of various supervised and unsupervised ML models such as RF and SVM.
- Achieved an accuracy of over 70% using CNN, with most errors occurring on similar genres.

## Awards and Honors

- 2x Ranked Top 500 Nationally, Putnam Competition February 2023, 2024
- Honorable Mention, Mathematical Contest in Modeling February 2024
- Faculty Honors, Georgia Tech December 2021 - Present
- 2x 1st place, GT Fitness Challenge, Open Division April 2023, 2024

## Skills

**Software:** Java, Python, R, C, C++, MATLAB, Ansible, AWS, Agile, Assembly, Docker
**Languages:** English (native), Russian (advanced), Spanish (intermediate)
**Coursework:** Machine Learning, Statistics, Artificial Intelligence, Object-oriented Programming, Data Structures and Algorithms, Multivariable Calculus, Mathematical Modeling, Computer Organization, Discrete Math, Systems and Networks, Real Analysis, Complex Analysis, Applied Combinatorics, Topology, Graph Theory