

# Bence Lukacsy

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## EDUCATION

### Stony Brook University

*Bachelor of Science in Computer Science and Mathematics*

Stony Brook, NY

Aug. 2023 – May 2027

- GPA: 4.0/4.0
- Honors College and Honors in Computer Science
- Relevant Coursework: Graduate Parallel Computing (AMS 530), Honors Algorithms (CSE 385), Probability Theory (AMS 311), Honors Data Structures (CSE 260)

## EXPERIENCE

### Machine Learning Research Assistant

*McKinnon Rosati Laboratory*

Sept. 2024 – Present

Stony Brook, NY

- Led a 4-person team to develop a supervised deep learning pipeline for automatic cell-type classification, achieving 93% accuracy
- Optimized JAX model training by leveraging CUDA and Nvidia A100 GPUs on the SeaWulf HPC cluster, scaling to ~4 million cells
- Presented research at the SBU Undergraduate Research Symposium, applying results to multiple scRNA-seq datasets

### Population Genetics Research Assistant

*True Laboratory*

Sept. 2024 – Present

Stony Brook, NY

- Designed a multiprocessed, individual-based Monte Carlo simulation in Python and R to model asexual reproduction in fruit flies
- Used the SeaWulf HPC cluster and Slurm job arrays to scale simulations to 96 CPUs and 100+ parameter sets
- Developed a high-performance simulation framework to explore parameters influencing asexual reproduction in very large population sizes

### Instructor

*iD Tech*

May 2024 – Aug. 2024

Remote

- Led three week-long machine learning courses for high school students; rated highest among ML instructors
- Provided personalized tutoring in programming, algebra, and chess to middle and high school students

## PROJECTS

### Content Moderation Bot for Discord | *JavaScript, discord.js, MongoDB, PM2*

June 2022 – Present

- Created a Discord bot that moderates content for 150,000+ users across 500+ online communities
- Implemented a robust regex filter that detects and deletes messages containing profanity
- Utilizing MongoDB to store state data such as on/off status for moderation features
- Self-hosting using Raspberry Pi 5 with PM2, achieving over 99% uptime

### Colorectal Cancer Risk Assessment | *Python, Flask, XGBoost, TensorFlow*

Oct. 2022 – May 2023

- Trained a deep learning model using data from NCI's Cancer Data Access System
- Developed a full-stack web application and REST API with Python Flask and JavaScript
- Initially deployed using AWS Elastic Beanstalk, now self-hosted with Nginx on Raspberry Pi 4
- Regeneron ISEF finalist and 1st place winner at RISEF

### Crypto Arbitrage Bot | *JavaScript, Harmony-JS, Puppeteer, Nodemailer*

Sept. 2022 – Jan. 2023

- Built a crypto token price tracker that uses Nodemailer to send alerts based on price signals
- Developed a web scraper using Puppeteer to identify and profit from mispricings on DeFi exchanges
- Integrated MetaMask into a dApp prototype using the Ethereum provider API and Harmony SDK

## SKILLS

**Languages:** Python, Java, C/C++, JavaScript, HTML/CSS, MATLAB, Bash, R

**Machine Learning:** JAX, Keras, TensorFlow, PyTorch, XGBoost, scikit-learn, NumPy, pandas

**Technologies:** Flask, Node.js, Git, Linux, Slurm, MongoDB, Nginx, AWS, CUDA, MPI, PM2