

# Muskan Gupta

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## EDUCATION

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### Cornell University

*B.S. Computer Science*

*Minors: Artificial Intelligence, Communications*

**Expected: June 2028**

*Ithaca, NY*

- **Relevant Coursework:** Object-Oriented Programming and Data Structures, Computing in Python, Linear Algebra, Discrete Mathematics (in progress), Functional Programming in OCaml (in progress)

## WORK EXPERIENCE

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### CytoHub Inc.

**June 2025 – Present**

*Machine Learning Intern*

- Built XGBoost ensemble models to predict organoid yield from time-series contraction data; improved performance through data augmentation and tuning
- Developed a full ML pipeline: automated preprocessing, prediction generation, and alert system for low-yield detection
- Leveraged AWS EC2 to deploy Jupyter notebooks; managed file transfers and large biological datasets
- Collaborated with engineers, product managers, and researchers to define requirements, integrate existing tools, and adapt to evolving project goals
- Communicated findings to technical and non-technical teams through documentation and presentations

### CU Solar Boat

**Feb 2025 - Present**

*Drivetrain Subteam Member*

*Ithaca, NY*

- Created drivetrain CAD models using Fusion360 and contributed to component testing for a solar-powered race boat
- Collaborated with teammates to troubleshoot performance issues and improve mechanical system efficiency
- Participated in system integration for competition-ready deployment

### Cornell Table Tennis Club

**Aug. 2025 - Present**

*Treasurer and Athlete*

*Ithaca, NY*

- Managed club finances and ensured compliance with university budgeting policies
- Raised over \$6,600 to support travel, equipment, and competition expenses
- Represented Cornell in coed and women's teams; secured 2nd place at the 2025 NCTTA National Championships

### USA Table Tennis

**June 2016 - Jul 2024**

*Coach and Athlete*

*National*

- Competed in national and international tournaments; gold medalist at 2023 Pan American Youth Championships
- Represented Team USA at the 2023 World Youth Championships
- Coached young athletes (ages 3–18), including national-level competitors

## SOFTWARE PROJECTS

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### Organoid Arrhythmia Prediction Machine Learning Model - *Python, XGBoost, Pandas, SciPy, scikit-learn, TensorFlow, Matplotlib*

- Built a machine learning model to predict arrhythmia probability in cardiac organoids using contraction pattern data
- Extracted RR interval features from ECG data and trained an XGBoost classifier with multiple evaluation metrics
- Applied 2D arrays and graphs to organize data, and used linear search to find specific values

### Space Shooter Video Game - *Java*

- Designed and implemented a 2D arcade-style game with rockets, aliens, and asteroids
- Programmed player movement, projectile mechanics, collision detection, and scoring system
- Used object-oriented design to manage game entities and logic modularly

### ML Practice with Kaggle Datasets - *Python, Matplotlib, Linear Regression, Pandas, SciPy, XGBoost*

- Trained ML models on Boston Housing and Skin Cancer datasets; used scikit-learn for exploratory analysis and benchmarking

## AWARDS

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- **Gold Medalist**, 2023 Pan American Youth Championships – USA Table Tennis
- **Team USA Representative**, 2023 World Youth Championships – USA Table Tennis
- **2nd Place**, S4CA Product Showcase – Sustainable Engineering Project
- **Cement Masons Local 400 Award** for innovative engineering design
- **#2 National Ranking**, US Table Tennis (Girls U19, 2023-2024)
- **President's Volunteer Service Award**