Aayush Mitra

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EDUCATION

Princeton University <div align="right">Princeton, NJ</div>
Bachelor's Degree, Focus: Computer Science & Mathematics <div align="right">*2025 - 2029*</div>

PROJECTS/EXTRACURRICULARS

Clubverse | *MongoDB, React, Express, Node (MERN Stack)* <div align="right">November 2022</div>
- Co-developed a **full-scale web application** that can be used for school **club management**.
- Schools can register administrators, teachers, and students by **parsing spreadsheets**.
- Clubs can be created and managed by sponsors, and officers can be appointed.
- Club posts have the ability to include images (**imgur API**), links, and notifications.

DreamHaven | *Next, Python, Flask, Express, Gemini API, MongoDB* <div align="right">October 2024</div>
- Built a full-stack web application that functions as a "journal" for dreams. It allows users to recall and **analyze dreams** over time and **interprets them using AI**.
- Attended "House of Code" at the **U.S. Capitol** as the **winning app for the Congressional App Challenge** District TX-34.
- Recognized by **Representative Vicente Gonzalez** for DreamHaven.

ZyNov | *HTML, CSS, JavaScript* <div align="right">October 2022</div>
- Co-developed a frontend website for a hypothetical space travel company for the Technology Student Association Webmaster Competition.
- Won **1st place** in the region.
- Created smooth scroll animations using **vanilla CSS and JavaScript** (no animation library).

DivineByDesign | *HTML, CSS* <div align="right">January 2023</div>
- Designed and developed a website for a hypothetical event-planning company as part of the Business Professionals of America Global Marketing Team Competition.
- Won **1st place in Texas** & recognized as **National Finalist Team**.

Reaction Estimation through Computational Training (REACT) | *Electron, Python, Pytorch, Numpy* <div align="right">March 2025</div>
- Built a **Physics-Informed Neural Network (PINN)** that predicts kinetics for enzyme-catalyzed reactions given substrate name.
- Predicted Michaelis constants (K_m) for biochemical reactions within **¡15% error**.
- Built a chat-like **desktop interface** for easy interaction with model.

Analyzing the Impact of Socioeconomic Variables on Education | *Python, Pandas, Numpy, Plotly* <div align="right">October 2022</div>
- Analyzed open-source socioeconomic data from the **US Department of Education**.
- Employed a variety of methods such as **regression, clustering, cosine similarity, and principal component analysis** using Python to gain insights.
- Wrote a 30-page report and made a poster displaying and explaining findings. Won **1st place in Texas** and **3rd place nationally**.

PROFESSIONAL EXPERIENCE

Data Science Research Assistant <div align="right">June 2023 – May 2024</div>
The University of Texas Rio Grande Valley <div align="right">*Edinburg, TX*</div>
- Performed in-depth **statistical and computational analyses** on the Mental Health Client Level Dataset from SAMHSA.
- Utilized **Python (Pandas, NumPy, Plotly)** to clean, aggregate, and visualize healthcare data.
- Developed a **Bernoulli Mixture Model** and applied **Eigenvector Centrality** to identify disorder comorbidities.
- Presented findings at the **National Latinx Psychological Association Conference** in Puerto Rico.

PROFESSIONAL DEVELOPMENT

Massachusetts Institute of Technology Institute for Data, Systems, and Society <div align="right">Online</div>
MITx MicroMasters in Statistics & Data Science <div align="right">*2024 - 2026 (est.)*</div>
- Completed advanced coursework in *Probability Theory, Statistics, Machine Learning with Python, and Time Series Analysis*.
- Dedicated approximately 10 hours per week to problem sets, projects, and exams.

TECHNICAL SKILLS

Languages: Python, JavaScript, Java, C, C/C++, HTML/CSS, SQL, MATLAB, R
Frameworks: React, Electron, Node, Flask, Next, MongoDB, Pandas, Numpy
Developer Tools: Git, Figma, LaTeX, Linux, VS Code, Postman
Libraries: pandas, NumPy, Matplotlib