Apurbo Barua

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EDUCATION

University of Arizona
Bachelor of Science in Computer Science, Minor in Business Administration

Tucson, AZ

Aug 2022 – May 2026

- **Leadership:** Chairperson of Academic Excellence, Delta Chi Fraternity (2024–Present)

EXPERIENCE

Software Engineer Intern
EduTrend

Aug 2025 – Present

Houston, TX (Remote)

- Engineered responsive front-end components in **React** and optimized back-end workflows in **Python** with **Firebase** integration for an education-focused web application.
- Developed **GraphQL APIs** and enhanced mobile UI/UX performance, reducing page load times by **35%**.
- Collaborated in Agile sprints with designers and backend engineers, delivering **100%** of sprint goals on time and improving feature delivery speed by **50%**.

CS 110 Undergraduate Teaching Assistant
University of Arizona, Dept. of Computer Science

Jan 2024 – Present

Tucson, AZ

- Hosted emergency tutoring sessions before finals, aiding 20+ students and boosting average scores by **15%**.
- Created automated grading scripts in **Python**, reducing assignment evaluation time by **50%**.
- Introduced a "math meme" learning method, increasing retention and engagement by **35%**.

Math 100 Undergraduate Teaching Assistant
University of Arizona, Dept. of Mathematics

Aug 2023 – Dec 2023

Tucson, AZ

- Assisted the lead instructor in delivering engaging math lessons to a class of 300+ students.
- Mentored and responded to the academic needs of 300+ students, enhancing their quantitative reasoning.
- Boosted average midterm performance by **12%** through targeted problem-solving workshops.

PROJECTS

Sort Visualizer | React, TypeScript, Vite (Link)
- Deployed an interactive UI to animate sorting algorithms with modular **React** components and visual cues.
- Reduced DOM re-renders by **40%** by decoupling logic from visual state updates.

RAG Chatbot | Python, LangChain, FAISS, Streamlit, Hugging Face (Link)
- Constructed a retrieval-augmented chatbot to process and answer 100+ PDF queries with **LangChain**, **FAISS**, and Streamlit.
- Achieved over **90%** factual accuracy via prompt engineering and context-aware response refinement.

Website Status Checker | Python, AWS CloudWatch, SES, Threading (Link)
- Built a monitoring tool for 50+ URLs using **AWS CloudWatch** and automated email alerts via SES.
- Achieved **98%** alert accuracy by fine-tuning thresholds and exception handling.

Socioeconomic Arrest Pattern Analysis | Python, scikit-learn, Pandas (Link)
- Deployed ML classifiers to forecast arrest risk, improving recall by **20%**.
- Identified **15%** income-based disparity via **chi-squared** testing and feature analysis.

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, TypeScript, C, SQL, Bash, HTML/CSS, R, MATLAB
Frameworks & Tools: React, Node.js, Express.js, Vite, Docker, Git, MongoDB, PostgreSQL, AWS (EC2, S3, Lambda, IAM, CloudWatch, SES), Excel
AI/ML: TensorFlow, scikit-learn, Pandas, NumPy, FAISS, Streamlit, LangChain, Hugging Face Transformers, Prompt Engineering, LLM Architectures
Certificates: IBM Generative AI Engineering, AWS Cloud Fundamentals