Aditya Choubey

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Research Interests

Number Theory, Graph Theory, Linear Algebra, Computational Mathematics
AI in Healthcare, AI Theory, Generative AI, Natural Language Processing, Reinforcement Learning

Technical Skills

Mobile Application Development, Web Application Development, AI Integration
Languages: Python, Dart, C, HTML, CSS, JavaScript, TEX
Frameworks/Libraries: Flutter, LangGraph/LangChain, ChromaDB, Ollama

Education

Weddington High School Sophomore – Class of 2028
GPA: 4.5625 (weighted), 4.0 (unweighted)
STEM Courses: AP Computer Science Principles, AP Precalculus, AP Calculus AB, NC Math III Honors, NC Biology I Honors

Experience

Volunteer, Shepherd's Center of Charlotte June 2025 - August 2025
Assists senior citizens with technology.

Teaching Assistant, Exotic Arithmetic 1 Course July 2025 - August 2025
Teaching Assistant to Dr. Harold Reiter (Professor of Mathematics at UNC Charlotte) in his Exotic Arithmetic I course, which is a course offered to middle- and high- schoolers seeking preparation for mathematical competitions such as Mathcounts and AMC 10.

Lecturer, AI and ML Club October 2024 – June 2025
Provides training in AI and other emerging technologies to club members.

Projects/Accomplishments

Care Plan Monkey
A mobile app for caregivers to create and manage a care plan for loved ones

- Won the 2023 Congressional App Challenge in North Carolina's 8th Congressional District: https://www.congressionalappchallenge.us/23-NC08
- Recieved media attention: WBTV and Enquirer Journal
- Built in the Dart programming language using the Flutter UI development framework, to create a fast, responsive, and platform-independent application

Congressional Insight Tool
A web-based application for Congressional staffers and the general public to easily extract insights from legislative data

- Won second place in the 2024 Congressional App Challenge in North Carolina's 8th Congressional District
- Built a Retrieval Augmented Generation pipeline on publicly available legislative data from congress.gov using ChromaDB and an embedding model
- Used the Llama 3.1 model to generate responses, accessed using LangChain and Ollama
- Used Flask to connect the HTML/CSS/JavaScript frontend to the Python backend

Byzantine Balls
A video game for testing hand-eye coordination and stress relief.

- A single-player video game in which the player tries to control 24 balls using the four arrow keys on the keyboard.
- Tests the user's ability to track and manage multiple objects at the same time, because balls try to wander off in different directions, and the user has to press the arrow keys to prevent them from wandering off, managing all 24 balls simultaneously.

Research
Currently conducting research exploring linear algebra and graph theory to solve a heptagram problem under Dr. Reiter , Professor of Mathematics at UNC Charlotte

2025 NASA Space Apps Challenge Hackathon
Participated in a 2-day hackathon; worked in a team to develop an application to detect exoplanets: https://findanexoplanet.com/

- Built and evaluated multiple machine learning models (such as Random Forests and Neural Networks) for exoplanet detection, using data sourced from the NASA Kepler Mission
- Used Pandas and Numpy for processing tabular and numerical data; SKLearn for training, inference, and evaluation of machine learning models

Interests/Hobbies

Clarinet: Won a Superior Rating as a part of the band at the North Carolina Music Performance Adjudication when I was an 8th grader at Weddington Middle School

Swimming, Running, and Weightlifting