

# Shanav Bagga

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## EDUCATION

**University of Illinois at Urbana-Champaign** **Champaign, IL**  
*Bachelor's of Science in Computer Science and Statistics* **Expected Graduation:** May 2026

- **GPA:** 3.78/4.00
- **Relevant Courses:** Data Science Discovery, Discrete Structures, Data Structures & Algorithms, Computer Architecture, System Programming, Linear Algebra

## PROFESSIONAL EXPERIENCE

**Department of Computer Science** **Champaign, IL**  
*Introduction to Computer Science II Course Assistant* *August 2023 - December 2023*

- Held weekly office hours to assist students in understanding key C++ concepts such as compilation, references, pointers, stacks, queues, trees, graph theory, polymorphism, file streams, and dynamic memory
- Guided students through writing efficient test cases that would aid them in thoroughly debugging their code
- Ran weekly lab sections which reviewed concepts covered and prepared students for their projects

*Introduction to Computer Science I Course Assistant* *January 2023 - May 2023*

- Spent several hours on a weekly basis teaching introductory Java programming concepts to students
- Interacted with students through course help site meetings and forum discussions
- Assisted students in debugging an Android application displaying the course staff's favorite locations

**AI Camp** **Remote**  
*Software Engineer Intern* *May 2023 - August 2023*

- Implemented a Chatbot in Python hosted through Streamlit that allows users to select a query engine, upload multiple files, and query them
- Utilized a variety of combinations of Llama Index, Langchain, Pandas, and Pinecone along with OpenAI's API to create multiple different query engines that each suite a unique task
- Created an automated test suite on the SQUAD dataset by iterating through each node, prompting OpenAI's API to form a question, and stored the question, response, context used, and response score
- Leveraged Llama Index's Response Evaluator to determine whether the response was strictly using the context given and informed the user if the query was unable to be answered with it
- Calculated the median response accuracy score of the Llama Index and Pinecone query engine to be 89.5%

## LEADERSHIP EXPERIENCE

**Project: Code** **Champaign, IL**  
*Technical Lead* *August 2023 - December 2023*

- Led a team of 10 students through the development of an interactive Python chatbot where students are able to upload PDFs of course textbooks and query them to assist them in studying
- Incorporated weekly meetings to provide students with knowledge of OpenAI's API, Vector Databases, Github, Langchain, and Llama-Index as well as office hours to provide additional assistance

## PROJECTS

**TCP Chat App | C++** **January 2024**

- Utilized Boost libraries to build a chat application that allows multiple clients to connect to a server through TCP networking protocols
- Created a separate thread to run the clients to ensure that connections are managed in a smooth fashion

**LSTM Trading Model | Python** **August 2023**

- Implemented a deep learning model using multiple LSTM layers in Keras and stock data through REST API calls to Alpaca to analyze stock data for a variety of tickers from the Q1 in 2022 until present
- Predicted the next 10-day moving average for each ticker and took long or short positions through comparing this prediction to the current 10 day moving average, resulting in 10% profit over 1 month

**GPT Taylor Swift Lyric Generator | Python, HTML, CSS, Flask** **July 2023**

- Utilized GPT-2 embeddings and the GPT-Neo model from Hugging Face to implement a full-stack website built through HTML, CSS, and Flask that outputs lyrics in the style of Taylor Swift
- Deployed the trained model with a loss of 0.138 to Hugging Face and fine-tuned the output of API calls by adjusting hyperparameters such as max tokens and repetition penalty

## SKILLS & AWARDS

**Languages:** C++, Python, Java, Rust, SQL, R, HTML, Javascript, CSS  
**Technologies:** Git, Flask, Hugging Face, Docker, AWS, React, Tensorflow