

# Abdullah Altaweel

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## Education

**Georgia Institute of Technology | Atlanta, GA**

Bachelor of Science in Computer Science: People and Media Concentration

August 2020 – Present

Expected Graduation: Dec 2024

## Experience

**Undergraduate Research Assistant**

August 2024 - Present

*Computational Behavior Analysis Lab @ Georgia Tech / Prof. Thomas Plötz*

- Using PyTorch to leverage natural language processing with a custom-tuned LLM to integrate textual sensor readings, aiming to enhance smart home solutions for individuals with mild cognitive impairments.
- Developing methods to incorporate wearable sensor data with environmental sensors, managing datasets with over 6,000,000 data points for large-scale activity recognition.

**SWE Intern**

June 2024 – August 2024

*Pandamensional*

- Designed and implemented 27 NLP-accessible financial API endpoints to seamlessly provide users with relevant data and analysis based on their prompts.
- Enhanced user experience by enabling natural language-based back-testing of complex financial strategies, integrating OpenAI APIs and LangChain.
- Delivered real-time financial data using the Financial Modelling Prep API, ensuring up-to-date stock information.

**Undergraduate Research Intern**

January 2024 – May 2024

*Computational Behavior Analysis Lab @ Georgia Tech / Prof. Thomas Plötz*

- Collected and labeled 400+ motion sensor data points simulating daily activities in smart homes for individuals with Mild Cognitive Impairment (MCI) and their caregivers.
- Applied 7 clustering and anomaly detection models to assist with data cleaning and labeling, improving performance.
- Achieved 97% precision in classifying activities using generative anomaly detection models to distinguish MCI persons from caregivers.

**Technical Project Manager**

August 2023 – May 2024

*Rate My Songs*

- Led the design and implementation of a live music rating application on iOS and Android using React Native.
- Utilized NodeJS frameworks and libraries to create a peer-to-peer live-streaming application, monetized with Stripe
- Managed data storage with MongoDB while maintaining privacy with hashing/salting while ensuring backend responsiveness with Socket.IO web sockets.
- Used project management tools such as Jira and Trello to schedule sprints using the Agile Scrum framework.
- Enforced clean code principles such as GRASP and SOLID to ensure readable and saleable code using regular Git PRs.
- Maintained a CI-CD pipeline by continuously unit-testing and building the application for testing on physical devices.

**Undergraduate Research Assistant**

May 2022 – May 2024

*Polar Geophysical Simulation Lab @ Georgia Tech / Prof. Winnie Chu*

- Developed tools for processing and analyzing radar film data from the 1970s, identifying ice-sheet structures and preparing datasets for Ph.D. researchers.
- Trained YOLOv8 models on custom datasets, achieving high accuracy in detecting critical artifacts in geophysical imagery.
- Optimized scanning processes, reducing average runtime from 120 seconds to 30 seconds per scan, enhancing efficiency.

## Projects

**Fulton County Water Quality Forecaster**

June 2024 – August 2024

*Team Lead/Machine Learning Architect*

- Developed 7 Keras forecasting models to predict water quality by analyzing 6 chemical concentrations in the water supply.
- Cleaned and processed 10 years of public water data using Pandas and outlier detection models, improving data reliability.
- Evaluated and optimized various deep learning architectures (Dense, LSTM, Conv) to ensure accuracy and generalizability across Fulton County.

## Skills

**Programming:** Python, Java, C#, C++, C, Javascript

**Frameworks:** *Python:* OpenCV, Numpy, Pandas, SciKi-Learn, PyTorch, Keras, TensorFlow, Statsmodels

*Javascript:* NodeJS, ExpressJS, React Native, ReactJS, Socket.IO, Stripe, MongoDB, Bcrypt

**Software:** Visual Studio, Git/GitHub, Computer Vision Annotation Tool, Jira, Trello, Unreal Engine 5, Unity, Blender, Figma