

# Serhan Asad

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## EDUCATION

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### Georgia Institute of Technology

Atlanta, GA

*Bachelors of Science in Computer Science with Minor in Economics (Major GPA: 3.70)*

*May. 2025 (Expected)*

- **Concentrations:** Intelligence and Information Internetworks
- **Relevant Coursework:** Computer Systems & Networks, Design & Analysis of Algorithms, Machine Learning, Mobile Apps & Services, Database Systems, Data Structures & Algorithms, Discrete Mathematics

## EXPERIENCE

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### College of Computing @ Georgia Tech

Jan. 2025 – Present

*Undergraduate Teaching Assistant - Computer Systems and Networks*

*Atlanta, GA*

- Assisting students in understanding Multithreading, Virtual Memory, OS Schedulers, OSI Model, Instruction Set Architecture (ISA), Instruction Pipelined Processors, and Caching
- Conducting weekly lab sessions to help students debug **Assembly** and **C programming** projects using **GDB**
- Grading coursework and collaborating with faculty to develop clear and effective teaching materials, implementing new office hours strategies to increase the participation of **over 150 students**

### Accelerating Materials Discovery with AI @ Georgia Tech

Aug. 2023 – Present

*Undergraduate Researcher*

*Atlanta, GA*

- Developing and fine-tuning Graph Neural Networks (GNNs) to predict material properties from atomic structures to enable efficient material discovery
- Analyzed the QM9 dataset with **NumPy**, visualized insights using **Matplotlib**, and fine-tuned **graph neural networks (GNNs)** (e.g., **SchNet**, **CGCNN**) to predict material properties, achieving a test error of 0.129
- Fine-tuning **LLMs** like **LLaMA**, **Gemma**, and **Mistral** on textual representations of crystal structures (e.g., CIF, Z-matrix) to train models for generating new structural descriptions through parameter-efficient techniques

### Big Data Big Impact @ Georgia Tech

Aug 2022 – May 2023

*Full-Stack Developer & AI Engineer*

*Atlanta, GA*

- Built a **Neural Network Model** to predict hurricane in the US with an average location error of ~100 kilometers and wind speed error of ~10 knots and their economic damage based on speed and wind
- Utilized the **NumPy** library to analyze **4** hurricane datasets and **PyTorch** to train predictive models
- Developed a **full-stack application** using **React** and integrated data visualization with **D3.js**
- Integrated **Google API** for geo-mapping services, allowing users to visualize and track hurricane patterns

### Effective Altruism at Georgia Tech

Jan 2022 - Dec 2022

*Organizer*

*Atlanta, GA*

- Led initiatives to promote AI safety and ethical considerations in technology development
- Organized workshops and discussions to foster a community of socially responsible technologists

## PROJECTS

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### Menace CLI | ([github.com/PramaYudhistira/menace](https://github.com/PramaYudhistira/menace)) *Go, LangChainGo*

- Built a terminal assistant with Go that leverages Large Language Models to create a lightweight terminal AI agent capable of executing shell commands and code generation, using LangChainGo to interface with LLMs
- Developed the terminal UI with Bubble Tea with real-time message streaming and interactive command execution
- Created persistent project-specific context management through configuration files, for the agent to maintain knowledge

### Football Player Detection and Analysis | ([github.com/Serhan-Asad/YOLO](https://github.com/Serhan-Asad/YOLO)) *Python, Kaggle, Roboflow*

- Developed a football analysis system that utilizes **YOLO** for real-time player detection and tracking during matches
- Implemented optical flow algorithms to measure camera and player movements, enabling accurate player speed and distance calculations
- Integrated **clustering** and **segmentation** methods to distinguish players based on jersey colors, providing detailed insights into player positions and team dynamics
- Utilized a combination of datasets from **Kaggle** and **Roboflow**, fine-tuning a **custom YOLO model** to achieve high accuracy in player detection and analysis

## TECHNICAL SKILLS

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**Certification:** AWS Certified Solutions Architect, Deep Learning Specialization, AWS Certified Cloud Practitioner, Software Eng. Virtual Experience J.P. Morgan

**Languages:** Python, Go, Java, C, C++, SQL (MySQL, SQLite, SQL Server), T-SQL, JavaScript, TypeScript, HTML/CSS

**Framworks & Libraries:** Next.js, React, Json.NET, FastHTTP, JavaFX, Entity Framework, Flask

**Tools & Technologies:** Git, Docker, Microsoft Azure, AWS, Github, Heroku, Vercel, GCC, GDB, NumPy, Pandas, TensorFlow, Firebase, Redis