Serhan Asad

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Education

Georgia Institute of Technology — Atlanta, GA

Bachelors of Science in Computer Science with Minor in Economics (Major GPA: 3.78) — *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

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

Face Recognition System | *Python, TensorFlow*

- Developed an advanced face recognition system using **FaceNet**, enabling both 1:1 face verification and face recognition
- Engineered a pre-trained **CNN model** to encode facial images into 128-dimensional vectors, leveraging the triplet loss function to ensure accurate and reliable identification, achieving 98% precision and recall
- Implemented a system capable of real-time face verification and recognition, eliminating the need for physical ID cards by matching live facial encodings against a database of authorized users

Football Player Detection and Analysis | *(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

Certification: AWS Certified Solutions Architect, Deep Learning Specialization, AWS Certified Cloud Practitioner, Software Eng. Virtual Experience J.P. Morgan
Languages: Python, Java, C, C++, SQL (MySql, SQLite, SQL Server), T-SQL, JavaScript, TypeScript, HTML/CSS
Libraries: Next.js, React, Json.NET, FastHTTP, NumPy, JavaFX, Entity Framework, TensorFlow
Developer Tools: Git, Docker, Microsoft Azure, AWS, Github, Heroku, Vercel