Aman Singh

US Citizen

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Education

Georgia Institute of Technology — *Atlanta, GA*
MASTER OF SCIENCE IN COMPUTER SCIENCE — *January 2022 - August 2023*
- **Machine Learning**, Specialization

Georgia Institute of Technology — *Atlanta, GA*
BACHELOR OF SCIENCE IN COMPUTER SCIENCE — *August 2019 - December 2021*
- **Intelligence & Modeling/Simulation**, Threads

University of Georgia — *Athens, GA*
BACHELOR OF SCIENCE IN COMPUTER SCIENCE — *August 2018 - May 2019*
- Transferred to Georgia Tech after one year

Skills and Coursework

Languages Python, JavaScript, TypeScript, C, C++, SQL, Java, Scala, C#

Frameworks Pytorch, Anaconda (NumPy, Pandas, Matplotlib, SciPy, scikit-learn), ROS, PostgreSQL, pgvector, spaCy, NLTK, Huggingface, Git, Node.js, Spark, PostgreSQL, Tableau, Flask, .NET, Docker, React, Redux, D3

Coursework Machine Learning, Artificial Intelligence, Statistical Analysis, Natutral Language Processing (NLP), Linear Regression, Computer Vision, Reinforcement Learning, Convex Optimization, Object Oriented Programming, Data Structures, Algorithms, Complexity, Computer Architecture, Modern Physics, Statistics, Differential Equations, Discrete Math, Quantum Mechanics, Robotics, Linguistics, Human-Computer Interaction

Research Experience

CORE Robotics Lab at Georgia Tech — *Atlanta, GA*
GRADUATE RESEARCHER — *August 2022 - August 2023*
- Working under Dr. Matthew Gombolay in the CORE Robotics lab
- Submitted a paper to Robotics: State and Society on the efficacy of having non-experts provide demonstrations to to teach robots via LfD. Conducted a user study with over 30 participants and observed how they taught the robot.
- Paper name: Investigating the Impact of Experience on a User's Ability to Perform Hierarchical Abstraction
- Programmed a Kinova MOVO robot to serve dementia patients in a hospice setting. Robot observes and plans in environment via ROS, computer vision, and deterministic planning.

Georgia Tech Research Institute — *Atlanta, GA*
GRADUATE RESEARCH ASSISTANT — *January - May 2022*
- Developing an app ClarityNLP that is used by clinical researchers to build and run patient phenotypes using structured and unstructured data.
- Developed NLP and regex algorithms to parse hospital documents and used PostGreSQL and internal APIs to allow comparisons and archival.

Vertically Integrated Projects: Big Data and Quantum Mechanics — *Atlanta, GA*
UNDERGRADUATE RESEARCHER — *January 6, 2020 - May 8, 2021*
- Utilized machine learning to enable faster and more accurate calculations of the quantum mechanical properties of chemical reactions
- Used Atomic Simulation Environment (ASE) to simulate atoms in certain positions and energy levels and used a variety of machine learning algorithms to train on these simulations.
- Contributed to hyperparameter optimization to maximize the capabilities of our convolution neural net (PyTorch), used HyperOpt to improve performance.

Work Experience

Edaptive Computing — *Remote*
MACHINE LEARNING DEVELOPER — *February 2024 - PRESENT*
- Developing an NLP Server which features similarity search, content scanning, recommendation, and generation for uploaded documents
- Utilizing vector databases, computer vision, LLMs, NLP libaries such as spaCy and NLTK, and transformer encoders to parse, search through, and summarize documents.
- Implementing a chatbot for NLPSERVER using an LLM equipped with RAG to easily query for and ask questions about uploaded documents.

Defense Research Associates   *Beavercreek, OH*

AI RESEARCHER   *August 2023 - PRESENT*

- Researched how to use LLMs solve math problems, such as finetuning with unique tokenizations
- Worked with various state of the art transformer and vision models to tackle tracking problems in defense.

Symbotic   *Wilmington, MA*

DATA ANALYST INTERN   *May 16, 2022 - August 5, 2022*

- Analyzed and manipulated thousands of bot data logs to improve bot performance using Python, Pandas, and Tableau.
- Worked with a team of engineers to create tools to preemptively detect, pinpoint, and prevent bot failures.
- Extracted data help fault rates in bot chargers fall more than 99% in problematic chargers

Chatham Financial   *Kennett Square, PA*

FULL STACK SOFTWARE ENGINEERING INTERN   *June 3, 2021 - August 6, 2021*

- Created an application with backend functionalities using .NET Core MVC Services that pulls in data from internal gRPC services and external REST APIs to process swap option volatilities
- Developed frontend capabilities using React/Redux to display and visualize market data in a 3D plot using Plotly.js

Fulton County Government   *Atlanta, GA*

CONTENT MANAGER   *June 3, 2019 - August 6, 2019*

- Overhauled the official Fulton County website and streamlined access to information about Fulton County services used by hundreds of thousands of people.
- Led my team in procuring all possible information from every department in Fulton County for the website
- Overhauled forms for all departments to allow for more streamlined electronic communication with citizens

Teaching Experience

CS 4510 - Automata and Complexity   *Georgia Tech*

TEACHING ASSISTANT   *September 14, 2021 - December 14, 2021*

- Assisted in instruction for CS 4510. Topics covered include finite automata, grammars, regular expressions, Turing machines, and P/NP.
- Helped students grasp difficult, abstract concepts. Oversaw the design and grading of homeworks and tests.
- 5-10 hours a week, including office hours and grading

Projects

Anomaly Detection for Cyber-Physical Systems

GROUP PROJECT MEMBER FOR CS 7643 - DEEP LEARNING

- Deep Learning final class project for detecting cyber attacks in cyber-physical systems using Tensorflow and Pytorch.
- Worked on using a transformer that predicts a sequence and compares to actual sequence to determine whether attack took place.
- 95% accuracy on a dataset of over 100,000 entries.

Awards & Recognition

Eagle Scout

BOY SCOUTS OF AMERICA

- Built a 45-foot long Stone Pathway in Autrey Mill Nature Preserve for my Eagle Scout Service Project

Clubs & Hobbies

Martial Arts

PARTICIPANT

- Trained with Georgia Tech boxing for 2 years, competed in amateur fights
- Currently training in Muay Thai, planning to spar soon

Music

CREATOR

- Adept at guitar, piano, synthesizers, drums, and tuba. Currently learning to sing
- Played Tuba in marching band for five years, section leader for two years
- Home producer, makes hip-hop, hyperpop, electronic, and hard rock songs with vocals using Logic and Ableton