

AYUSH ZENITH

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Skills

PROGRAMMING LANGUAGES

Python 2/3
Java
C
Racket
Bash
x86 Assembly
HTML/CSS
System Verilog
SQL

TECHNOLOGIES

Machine Learning
Natural Language Processing
Transformers
LLM
Computer Vision
Multimodal Models
Threading
Git VCS
Linux/Windows/macOS
Blockchain
Cloud
Control Systems

TOOLS AND LIBRARIES

Pytorch
Tensorflow
OpenCV
Pandas/NumPy/SciPy/Matplotlib
LangChain
Flask
Bootstrap

LANGUAGES

English
Hindi
Kannada
Tulu
Malayalam

HOBBIES

Taekwondo
Karate
Jiu-Jitsu
Chess
Anime/TV
Gaming
Eating/Cooking
Puzzles

Education

Northeastern University, Boston, MA

Hourly College of Computer Science

2021 to Apr. 2025

Candidate for B.S. Computer Science, Concentration in Artificial Intelligence; 2025

GPA: 3.5/4.0 (Cumulative) & 3.7/4 (Major); **Dean's List**

HackMIT 2022 New Frontiers Track Winner - Built the best project in the New Frontiers track which incorporates technology emerging at the very forefront of industry, including artificial intelligence, machine learning, CV, and VR/AR

Actively competing for **Northeastern Taekwondo's** A Team Sparring and won at multiple collegiate tournaments

Relevant Coursework: Calculus, Statistics, Linear Algebra, Discrete Structures, Object Oriented Design, Algorithms and Data Structures, Embedded Design, Computer Systems, Data Modeling, Artificial Intelligence, Theory of Computation, Robotics: Science and Systems, Machine Learning & Data Mining, Software Development, Research Seminar: Natural Language Processing for Robotics

Employment

Generalizable Robotics and Artificial Intelligence Laboratory (GRAIL) @ Northeastern University

Research Assistant

Boston, MA

Sept. 2024 to Current

• Working under the advisement of **Prof. Lawson L.S. Wong** alongside **Lin Feng Zhao**

• Researching applications of **Vision Language Models with Robotics for perception, mapping, communication, planning, & control** with the goal of **publishing my findings on SOTA approach for zero-shot robotic semantic navigation in indoor spaces by December 2024**

Air Force Research Laboratory (AFRL) @ Information Directorate (RI)

Researcher

Rome, NY

May 2024 to Current

• Working under the advisement of **Dr. Jing Lin**

• Researching and Developing a **SOTA Dataset Quality Metric for Synthetic data** on Object Detection Tasks & working towards **publish my findings as primary contributor by October 2024**

Genentech: A member of the Roche group

Deep Learning Informatics Co-op

South San Francisco, CA

July 2023 to Dec. 2023

• Worked on the Development Science Informatics team, on harnessing **Deep Learning techniques to help drug discovery and development**

• **Built a semantic search engine and question answering bot** for internal data and was used by **150+ scientists** with **Retrieval Augmented Generation** powered by **fine tuned multimodal transformers** to help search through documents as well as perform other tasks in the pipeline such as **Relationship Extraction, Name Entity Recognition, etc.**

• Created datasets and trained models by generating synthetic data, removing semantic duplicates, or irrelevant information using LLM's

Parallel Wireless

AI/ML & Matlab Intern

Nashua, NH

June 2021 to Sept. 2021

• Designed and programmed architectures for Convolutional Neural Networks and Dense **Neural Networks to perform 5G channel estimation**

• Implemented the Neural Networks on the **OpenVINO and TensorRT platforms to inference in real time**

Abris.io

Part-time Software Engineer

Remote

June 2021 to Jan. 2022

• Developed a **NFT marketplace** as a team of 4 on the **Algorand Blockchain** and **implemented/worked with IPFS** (decentralized hypermedia protocol), **Cloud storage (AWS S3)**, **Serverless architecture (AWS Lambda)**, etc.

• Tested and **generated quality assurance reports** weekly on all features and bugs discovered

Town of Andover

Energy Intern

Andover, MA

Mar. 2019 to June 2020

• Developed data driven applications for the Town of Andover to **analyze usage of resources and found ways to conserve resources and reduce waste**

• Built a full stack **BACnet (Building Automation and Control) monitoring system for gas, electric, and HVAC infrastructure of the Town of Andover**

Nextuple

Quality Assurance Software Intern

Remote

July 2020 to Aug. 2020

• **Developed automation test tools and wrote automated test cases** for a test suite to test microservice software products developed by Nextuple developers

Projects

PlugLess

Oct. 2022

• Developed a desktop application that uses the camera of a laptop to track and analyze finger movements and interfaces with consoles like the Nintendo switch to emulate a controller without needing to buy one

• Allows users to play games like MarioKart with an "imaginary controller" in the air for when controllers aren't available

• Built in under 24 hours @ HackMIT 2022 using: Multithreading, Computer Vision, Machine Learning Models, and Reverse Engineering Nintendo Switch Bluetooth codes

Neural Sign Language Translation With Language Models

Sept. 2022 to Dec. 2022

• Researched how domains like sign language translation (SLT) that lack comprehensive datasets can benefit from transfer learning using pretrained transformers and determined which transformers seem to boost training and provide better results for low resource problems like SLT

• Recreated existing SOTA papers on Neural SLT and tested our approach against the SOTA & documented our findings in a research paper

PreTweet

June 2020

• Developed a way Twitter users can avoid posting tweets in the heat of the moment by instead posting them to Pretweet where the tweet will be delayed from sending and can be reviewed by professionals

• Built in less than 24 hours at Hack the Northeast 2020 using: Flask & Svelte framework, Sentiment Analysis Models, HTML, CSS, JavaScript, TypeScript, SMTP mail server, Twitter API, Flask-Dance, Flask-Login, and Flask-SQLAlchemy