

Rohith Mukku

rohithmukku@gmail.com | <https://www.linkedin.com/in/rohith-mukku/> | <https://rohithmukku.github.io/> | Mobile: +1 551-318-7399

EDUCATION

MS, Computer Science, New York University, **GPA: 3.97/4.00**

Jan 2021 — Dec 2022

Courses: Deep Learning, Deep Reinforcement Learning, Natural Language Processing, Natural Language Understanding, Graphics Processing Units, Machine Learning, Computer Vision

BTech, Computer Science, Indian Institute of Technology Kanpur

Jul 2014 — Jun 2018

TECHNICAL SKILLS

Software Engineering

C/C++ • Python • Bash • AWS Lambda, AWS Fargate • Git • familiar with Java, Haskell, SQL

Machine Learning

PyTorch • Sci-kit • Pandas • Numpy • HuggingFace • Weights & Biases • MLFlow • AzureML • SLURM

RELEVANT EXPERIENCE

Roots Automation

Feb 2023 - Present

Machine Learning Engineer

New York

- Implemented **BERT** based text classifier for the base package of Roots Automation that runs various ML algorithms.
- Research on prompt engineering and finetuning **Large Language Models** for Insurance related entity extraction from documents.

Amazon Web Services

May 2022 - August 2022

Software Development Engineer Intern

Seattle

- Studied and designed an existing component that uses **AWS EC2** such that it uses AWS Serverless applications like AWS Fargate as compute platform. Evaluated with other serverless applications as well.
- Successfully implemented the component as an **AWS Fargate** instance and made use of **AWS CDK**, **AWS DynamoDB**, etc.

Samsung Research Institute Delhi

Jul 2018 — Dec 2020

Software Engineer

Noida

- Developed an application that recommends apps to improve user experience using contextual bandits, Naive Bayes, etc.
- Implemented bootloader code to support **KASLR** (Kernel Address Space Layout Randomization) with ARM Trusted Firmware code.

Samsung Research Institute Delhi

May 2017 — Jul 2017

Software Engineer Intern

Noida

- Implemented image segmentation using **OpenCV** on TV images and implemented a CNN model in **Caffe** with accuracy of 95.6%.

PROJECTS

Out-Of-Distribution Detection using Normalizing Flows [Github] [Report]

Sep 2022 — Dec 2022

Machine Learning Research Project

Prof. Rajesh Ranganath

- Implemented a method using **FlowGMM**, a **Normalizing Flow** model which incorporates **Gaussian Mixture Models** to detect out-of-distribution (OOD) data. Code implemented in PyTorch.
- Improved AUROC, AUPRC OOD detection scores for MNIST, FashionMNIST, SVHN as in-distribution datasets.

Red Teaming Language Models [Github][Report]

Jan 2022 — May 2022

Natural Language Understanding Research Project

Prof. Sam Bowman

- Implemented Zero-Shot, Few-Shot, Supervised Learning, Reinforcement Learning methods for adversarial test case generation with **GPT-2** Large and **BlenderBot** as the target language model.
- Successfully replicated results similar to the ones discussed in the paper for Zero Shot, Few Shot, Supervised Learning.

Fast Non-Parametric Multimodal Word Embeddings [Github] [Report]

Sep 2021 — Dec 2021

Natural Language Processing Course Project

Prof. He He

- Proposed a **Dirichlet Process** based Gaussian word embeddings to determine the number of senses of a polysemic word.
- Analyzed the Gaussians to assess the “breadth” of a word based on the covariance matrix
- Employed various measures to use the above embeddings on the word-entailment task to get an accuracy of **65.7%**.

Self Supervised Learning Competition [Final Repo] [Github] [Report]

Jan 2021 — May 2021

Deep Learning Course Competition

Prof. Lecun, Prof. Canziani

- Executed SOTA self-supervised (SimCLR, MoCo) and active learning methods on a dataset of **512k** unlabeled, **50k** labeled images.
- Ranked **7th** over 23 teams in the competition, with a test accuracy of 36.7%.

ACADEMIC POSITIONS

Research Assistant - Prof. Lerrel Pinto [Blog]

Sep 2021 - May 2022

- Ran ablation tests on **Hello Stretch** Robot and helped with the code for the project **VINN** which focuses on leveraging self-supervised learning and nearest neighbors algorithms to outperform Behavioral Cloning. Robotic tasks studied: Door Opening, Push, Reach.
- Replicated VINN on different tasks and scaled up the method to handle variety of tasks such as **Push**, **Pick and Place**, **Reach**, etc.
- Used tools like **OpenSfM** to extract actions from demonstrations, **ROS**, **pyKDL** to perform inverse kinematics and robot actions.

Grader/TA - Deep Learning Course

Sep 2021 - Dec 2022

- Grader/TA for the course Deep Learning (taught by Prof. Lecun, Prof. Bruna, Prof. Canziani) for Fall 21 and Fall 22 semesters, designed extra credits for one of the homeworks on Structure Prediction from Text using **Graph Transformer Networks** by Facebook AI.