Rohith Mukku

http://rohithmukku.github.io/
https://www.linkedin.com/in/rohith-mukku/

Email: rohithmukku@gmail.com,
rm5708@nyu.edu
Mobile: +91-8604926533

EDUCATION

- **New York University - Courant Institute of Mathematical Sciences** — New York, United States
  Masters in Computer Science; CGPA: - — *January 2021 – December 2022*
- **Indian Institute of Technology Kanpur** — Kanpur, India
  Bachelor of Technology in Computer Science and Engineering; CGPA: 7.6/10.0 — *July 2014 – May 2018*

WORK EXPERIENCE

- **Samsung R&D Institute Delhi** — Noida, India
  Software Engineer — *July 2018 - Present*
  - **Linux Kernel**: Debug kernel crashes and fix them, improve kernel performance by reducing memory usage through kernel stacks, print buffers, etc. Learned kernel builds and buildroot along with Linux virtualization.
  - **Reinforcement Learning**: Studied different algorithms and analyzed Multi-armed bandits, contextual bandit performance on a 'task' required for Samsung TVs. Compared it with other machine learning algorithms like KMeans, Naive Bayes.
  - **Bootloader support**: Implemented code for bootloader to support KASLR (Kernel Address Space Layout Randomization) by referring ARM Trusted Firmware code.

INTERNSHIPS

- **Samsung R&D Institute Delhi** — Noida, India
  Software Engineering Intern — *May 2017 - July 2017*
  - **Optical Character Recognition**: Worked on Image Segmentation using OpenCV in python on characters taken from Samsung TV pictures.
  - **Neural Networks**: Studied different Neural Networks like CNNs, RNNs & LSTMs required for OCR. Implemented a simple model of MNIST in caffe, also studied CNN model in Lua.
- **Tata Consultancy Services** — Pune, India
  Software Engineering Intern — *May 2016 - July 2016*
  - **Web Development**: Developed Web Applications using ASP.NET, C# to store and retrieve data regarding charger(NissanLeaf) details. Worked on SQL and ASP.NET based Web Solution for the Electric Vehicle Charging Infrastructure. Developed Web Pages in ASP.NET for IIS Server and created EVSE master database in SQL

SELECTED COURSE PROJECTS

- **Self Supervised Learning (Ongoing)** — CSCI-GA.2572: Deep Learning
  https://github.com/rohithmukku/DLCompetition — *Prof. Yann LeCun, Prof. Canziani*
  - Implemented SOTA self-supervised methods and trained it on the provided dataset of $512k$ unlabeled images, $25k$ training images, $25k$ validation set. Methods used and compared: SimCLR, SimCLR-v2, MoCo, MixMatch, Relation Net
  - Exploring active learning for labeling. Achieved accuracy of 22% on the training dataset.
- **JCP Compiler** — CS335A: Compiler Design
  https://github.com/rohithmukku/jcp — *Prof. Amey Karkare*
  - Implemented a Java to x86 compiler from scratch in python using ply.
  - Incorporated advanced features like object heap allocation, classes, foreign function interface.
- **Dots and Boxes** — CS653A: Functional Programming
  https://github.com/krishnakarthik9/dots-and-boxes — *Prof. Amey Karkare*
  - Implemented a dots and boxes game in Haskell.
  - Implemented human vs human mode and human vs easy AI mode.
- **Cache Replacement Policies on Graph applications** — CS698Y: Modern Memory Systems
  https://github.com/rohithmukku/CS698Y-Project — *Prof. Biswabandan Panda*
  - Studied the graph applications and the performance of cache replacement policies like LRU, Hawk Eye, SHiP on these applications.
  - Graph application benchmarks include Twitter, Web, Road, Kron, Urand with algorithms being BFS, Single-Source shortest path, Page Rank, Connected Components, Betweenness Centrality, Triangle Counting.

- **Question Answering based on Passage** CS671A: Natural Language Processing
  https://github.com/2ashish/NLP-Answering-Reading-Comprehension *Prof. Harish Karnick*
    - Implemented two models: Memory network framework, FastQA in tensorflow with keras.
    - Trained on two datasets: SQuAD, bAbI.
    - Studied deep neural networks, memory networks, pointer nets, recurrent span representation (RaSoR).
- **Comparison of testing tools on GNU Core Utils** CS498A: Undergraduate Project-III
  https://github.com/rohithmukku/rohithmukku.github.io *Prof. Subhajit Roy*
    - Compared two testing techniques: Symbolic Execution (KLEE)and Fuzzing (American Fuzzy Lop) on 89 GNU Core Util tools.
    - Studied Probablistic Programming using Problog and explored possible uses in cases of inference and checking code satisfiability
- **Comparison of Cache Replacement Policies** CS422A: Computer Architecture
  https://github.com/rohithmukku/Project422 *Prof. Mainak Chaudhari*
    - Implemented LRU, SHiP, SRRiP cache replacement policies using Intel's PIN simulation API.
    - Compared their respective cache hits, misses on eight benchmarks and analyzed their miss rates.

OTHER COURSE PROJECTS

- **HTTP Proxy (CS425A, Computer Networks)**: Implemented a HTTP Proxy in python with functionalities such as cache feature, domain filtering, logging.
- **NachOS (CS330A, Operating Systems)**: Designed various functionalities in NachOS - instructional software in C++ to run as secondary OS on linux by implementing various system calls (fork, join), various scheduling algorithms (FIFO, RR, Unix Scheduler), various techniques for synchronization (semaphores, condition variables), demand paging, shared memory.
- **Hubot (CS252A, Computer Laboratory-II)**: Developed scripts for Hubot which when implemented can handle emails, exam-schedules, basic google spreadsheets and other simple tasks using Nodejs, Coffeescript, Slack API, npm.
- **Personality based Chatbot (CS771A, Machine Learning)**: Developed a chatbot that can learn and imitate personality based on a user.
- **Streaming Twitter Data (CS315A, Principles of Database Systems)**: Developed a tool that streams random tweets from twitter and stores in database.
- **Stable Marriage Problem (CS201A, Mathematics for Computer Science-I)**: Studied the Stable Marriage Problem and its variants, analysed the proof of the algorithm to solve stable marriage problem and studied various standard techniques used in solving the problem.

PROGRAMMING SKILLS

- **Languages**: C, C++, Python, Bash, Assembly (x86, ARM)
- **Technologies/Software**: PyTorch, Tensorflow, Scikit, Sqlite3, Anaconda

COURSEWORK

IIT Kanpur
- Fundamental of Computing, Mathematics for Computer Science, Data Structures and Algorithms, Computer Organization, Operating Systems, Theory of Computation, Principles of Database Systems, Compiler Design, Computer Architecture, Computer Systems Security, Computer Networks, Modern Memory Systems, Introduction to Machine Learning, Functional Programming, Introduction to Natural Language Processing

New York University
- Fundamental Algorithms, Programming Languages, Deep Learning

SCHOLASTIC ACHIEVEMENTS

- Secured All India Rank 166 (among 1.4 million), and secured State Rank 65 (first level test for admission in my undergraduate college/IITs)

- Secured All India Rank 751 (among 200,000 students) in JEE ADVANCED 2014 (second level test for admission in my undergraduate college/IITs)