Nikitha Gollamudi

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Education

Program	Institution	CGPA	Graduation Year
Master of Science, Computer Science	The University of Texas at Austin	**4/4**	May 2023
Bachelor of Technology, Computer Science and Engineering	Indian Institute of Technology Madras	**9.3/10**	May 2018

Professional Experience

Software Engineering Intern - Google **Jun 2022 – Aug 2022**

Mentor - Sriram Krishnamoorthy *Seattle, US*

- Developed an emulator for an abstraction of Instruction Set Architecture used in the Google Edge Tensor Processing Unit.
- Emulator generates C++ code which can speed up compiler development by improving testing/simulation time. Also can be used in targeted simulations like internal memory unit simulations.
- Developed the test harness around the emulator to compile and test the generated code.
- The generated code is within 2-3 times of the baseline in terms of latency which is very promising.

Associate - Goldman Sachs India **June 2018 - July 2021**

Managers - Balamurugan Dakshinamurthy, Verbeek Francois, Chandra Sharat *Bengaluru, India*

- Worked on a low latency trading platform called **Atlas** which uses sequencer based architecture.
- Developed a python application to monitor the health of the trading platform in real-time.
- Developed a python application to archive/view files in a centralised location which are generated on different remote hosts.

Software Engineering Intern - Microsoft, India Development Center **May 2017 – July 2017**

Mentor - Girish Rao *Bengaluru, India*

- Worked in a team of two to develop Cortana Skill using Microsoft Bot Framework. This Skill uses CRM (Customer Relationship Management) at its backend to assist customers in resolving their issues.
- Developed a real-time datastream pipeline between Cortana and live agent console to escalate queries and the context of the user's conversation to a human agent when the user is not happy with the self service solutions. This enables the user to continue in the same interacting channel (Cortana) throughout the conversation.
- Worked on enhancing the UI to provide a rich user experience.

Software Engineering Intern - Microsoft, India Development Center **May 2016 – July 2016**

Manager - Pankaj Garg *Hyderabad, India*

- Worked on Microsoft Bot Framework to develop a bot on Skype platform, aimed to ease the efforts of a citizen while using the government services
- Utilized LUIS, a Microsoft Cognitive Service to understand the overall meaning and pull out the relevant data from the user's natural language text.
- Developed an independent module to extract required details from documents in various formats like PDF, JPEG etc.,

Scholastic Achievements

- Secured an All India Rank **116** in **IITJEE 2014** and **84** in **EAMCET 2014**, Andhra Pradesh.
- Awarded membership in **Kishore Vaigyanik Protsahan Yojna 2012-2013** conducted by Indian Institute of Sciences.
- Secured Olympiad rank **14** in **IMMO 2010** (International Master Mathematics Olympiad).

Key Projects

Chance Constrained Motion Planning using RL **Jan 2022 -May 2022**

Course Project, Reinforcement Learning: Prof. Peter Stone, Prof. Scott Niekum *UT Austin*

- Chance-constrained motion planning is a method to synthesize an optimal path in the presence of a noisy environment and robot dynamics, that satisfies a user-specified threshold of failure probability. Through Lagrangian relaxation, we converted the chance-constrained (risk-constrained) motion problem to a risk-minimizing problem.
- Used RL techniques like Q-learning, Sarsa(lambda) to solve this optimal path problem.
- Synthesized an optimal policy which has appropriate level of safety with the RL methods for both Discrete and Continuous Space.

- Calculated estimated risk for all the optimal policies using RL prediction algorithms.

Election Voting System **Aug 2021 -Dec 2021**
Course Project, Specify, Verify and Implement Distributed Systems: Prof. Ken McMillan *UT Austin*

- Developed a distributed voting system that guarantees Linearizability for user votes and Eventual consistency for total votes.
- Used Paxos to maintain consensus and Sharding for scalability.
- Developed a formal specification for this system using IVy and verified it.

Proxy: Attendance Assistant **Jan 2017 -May 2017**
Course Project, Software Engineering Lab: Prof. N S Narayanaswamy *IIT Madras*

- Developed a software for maintaining records of student attendance for a particular course using Face Recognition APIs
- Used Django Framework for designing the software
- The software if adapted by institute, would provide a conclusive solution to the recurring problem of proxy attendance

Mini Java Compiler **July 2016 - Nov 2016**
Course Project, Compiler Design Lab: Prof. V Krishna Nandivada *IIT Madras*

- Built from scratch, a basic optimizing compiler for **MiniJava**, a subset of Java.
- Implemented lexical analysis, type checking, register allocation and conversion to machine-level code.

JOS Kernel modelling x86 Operating System **Jul 2016 - Nov 2016**
Course Project, Operating Systems Lab : Prof. Chester Rebeiro *IIT Madras*

- Designed and built several modules for the JOS operating system with UNIX-like functions for the standard x86-based computer.
- Implemented page management, kernel address space, user enivornments, exception handling etc.
- Gained thorough understanding of basic operating system principles

Research Experience

Actionable Intelligence: Understanding and Treating Parkinson's Disease **Jan 2023 - ***
Guide: Prof. Chandrajit Bajaj *UT Austin*

- Developing an early detection and diagnosis model for Parkinson's disease.
- Using self supervised RL techniques on multi-parametric MRI data for the detection model of the disease.

Performance Evaluation of Cache Optimization in big.LITTLE architecture **Jan 2018 - May 2018**
B.Tech Project, Guide: Prof. Rupesh Nasre *IIT Madras*

- Performed a cache Optimization(Prefetching) for specific parallel constructs in big.LITTLE Architecture.
- Instrumented the code and analysed the execution time, memory and power consumption of different OpenMP benchmarks.
- Used IIT Madras OpenMP framework (IMOP), a source to source compiler framework to implement this prefetching optimization.

Course Work & Skills

- **Systems** - Specify Verify and Implement Distributed Systems, Dependable Computing Systems, Operating Systems, Computer Networks, Database Management, Compiler Design, GPU Programming, Network Security, Computer System Design
- **Other CS Courses** - Reinforcement Learning, Cryptography, Principles of Software Engineering, Data Structures and Algorithms, Discrete Mathematics, Principles of Communication, Machine Learning, Kernel Methods for Pattern Analysis, NLP
- **Math Courses** - Convex Optimization, Basic Graph Theory, Linear Algebra, Probability.
- **Minor Stream** - Fundamentals of Operational Research, Advanced Operations Research
- **Skills** - C, C++, Java, Python, JavaScript(novice), Django, Git, LaTeX, IntelliJ Idea, SQL.

Teaching Assistance Experience

Cryptography, Graduate level course **Sep 2022 - Dec 2022**
Distributed Systems, Undergraduate level course **Jan 2022 - May 2022**
Elements of Graphics and Visualization, Undergraduate level course **Sep 2021 - Dec 2021**

- Responsible for assignment evaluations
- Mentored students with object oriented programming and Distributed systems concepts.

Extra Curricular Activities

- Attended Grace Hopper Conference in 2021.
- Worked as Deputy Placement Coordinator in CSE department, IIT Madras. Helped in organizing the tests and interviews smoothly before and during placement season in 2015.
- Participated in IITM-Restcomm Hackathon and built a chrome extension - **Youtube Notes** which enables users to make and view notes while watching online lectures.