M Nishkal Gupta

+918712749952 | mnishkalgupta@gmail.com | nimy18@student.bth.se

About Me

A self motivated technology enthusiast interested in bringing useful and creative ideas into existence by applying my expertise by the knowledge gained from my education and industrial experience. Always looking to take up research roles that push my limits to get the best out of me which would benefit the society as well as the research community.

Profile Links

LinkedIn, **GitHub**, **Personal Website**

Education

Blekinge Institute of Technology — Karlskrona, Sweden
Masters in Science, Dept of Computer Science — *Jan. 2019 – Oct 2020*

Jawaharlal Nehru Technological University — Hyderabad, India
Masters in Technology in Electronics Engineering,Emphasis on Telecommunication Systems — *June 2018 – Jan 2019*

Jawaharlal Nehru Technological University — Hyderabad, India
Bachelors in Electronics and Communication Engineering — *Aug 2015 – May 2018*

Experience

MLOps Research Engineer — December 2022 – Present
One Convergence — *Hyderabad, India*

- Software Developer to research and develop functions and tools for an end to end MLOps platform called Dkubex which is involved in AI product development. I typically work with integrating open source ML tools and large language models into the platform which is built by leveraging the power of Kubernetes and MLflow, I have also integrated and worked with flyte ml pipelines for use cases in life science. Currently I am designing an developing an architecture for building a software router that helps multiple LLM's to communicate with each other and also to scale up and down the LLM services on demand, the router acts a proxy between chatbot and LLM services including agents to complete a task.

Founder — April 2022 – Nov 2022
SKN Technologies — *Hyderabad, India*

- Founder of an AI/ML consulting startup for providing clients with solutions for their business problems using some of the cutting edge AI/ML and MLOps tech stack.

Software developer for 5G packet core — Aug 2021 – Feb 2022
Ericsson AB — *Gothenburg, Sweden*

- Developer to maintain products (units, nodes, networks, systems and solutions) including all development activities such as: requirement analysis, system design, architecture design, hardware design, software design, integration, verification, simulations, tools design, product life cycle management support and product documentation.

Research Assistant — June 2019 – September 2019
Blekinge Institute of Technology — *Sweden*

- Worked as a research assistant under Professor Siamak Khatibi, I supported him on two projects, first one being data simulation and analysis using various statistical as well as machine learning models majorly related to markovian chain model for supporting the communication network of a bus. Second project involved with developing of a own algorithm for path planning of a turtlebot 2 robot and it's comparison with A* and dijkstra's algorithms for performance evaluation.

Technical Intern — May 2018 – June 2018
Caribou Technologies — *Hyderabad, India*

- Worked on IoT tech stack (Raspberry Pi, Linux OS and customized sensors), developing and testing functionalities using C and Python libraries over the cloud for building smart lock solutions as part of the home automation project in collaboration with cross country team in India and Canada.

Research Work

Reduced sampling method for robotic path planning Ongoing

* Designing an algorithm to generate less and optimal sampling points when compared to probabilistic road map(PRM) and rapidly exploring random tree(RRT). The algorithm is first being implemented in 2D environment by converting the map into a Cartesian plane. Unlike PRM and RRT this algorithms focuses on connecting the start and goal points using shortest distance which is a straight line and whenever an obstacle is encountered it traverses across it's perimeter by making sampling nodes and equal interval, at every interval it checks if the straight line from it to the goal is in free space configuration, if so path is found or else the process continues until the whole perimeter of the obstacle is traversed and later shifts to other obstacles if any. Aim of this process is to eliminate the complexity and no of sampling nodes done by previous algorithms.

Master Thesis - Design of Key-exchange Mechanisms using Blockchain. Jan 2020 – Oct 2020

* Designed and analyzed a framework by performing extensive research for adapting a decentralized PKI for key exchange mechanisms for software artifacts for micro-services with the help of blockchain technologies.

Research on Fraud Detection in Online Payment Aug 2019 – Nov 2019

* Performed an SLR on Online Fraud Detection using various Machine Learning techniques and built a framework to analysis the same practically.

Research on Trusted Computing in Containers Aug 2019 – Nov 2019

* Literature review describing various technologies and proposals for building trust in cloud based containers. The main focus of this paper is to study the trusted platform module (TPM) and it's relationship with container technology.

Projects

Building Electric bike from scratch

· Designed and built an electric bike from scratch using renewable material for the bike chassis, a DC rear hub motor, a 2kw hour battery, reused battery management system and other electronic parts.The entire bike was built under 1000 dollars.

Automatic Labelling using Machine Learning

· Implemented a machine learning tool for automatically labelling the raw sensor data and later generating features from it. Principal component analysis and Kmeans were the 2 algorithms used.

Obstacle Detection Robot

· Built an obstacle detection robot with the help of arduino, camera, and ultrasonic sensor for a college robot festival.

Hand Gesture Recognition

· Developed a software using python and AutoGUI along with arduino and ultrasonic sensor for handling laptop functions with hand gestures.

Path Follower Robot

· Used arduino uno along with ultrasonic sensor, camera module and a robot structure built out of scratch to make it follow a neon tape for a robot competition.

Cryptocurrency using Blockchain

· Built a Cryptocurrency similar to Bitcoin using python and Flask API.

Prediction and Analysis of Spam Emails using Machine learning models

· Performed an experiment to compare the computational and predictive performance of ML models on a spam detection task. Ten-fold validation test was conducted to estimate the performance of a model in general, followed by statistical test such as nemenyi and friedman.

Chat Client and Server

· Built a command line chat system based on Client Server architecture using TCP/IP protocol.

Quality of Experience for VoIP Service

· Analyzed the performance of Free Call application which is based on voice over internet protocol service in relation to its connectivity to the internet. Performance was measured using delay, data usage and experience.

Machine Learning Model for Communication Network of a Bus

· Developed a ML based model that analyses and rectifies problems in the communication network of a vehicular system. Model supports both static as well as dynamic data. Later google map's API was used for plotting a heat map for the communication between the bus and the reporting stations.

Design of Network Architecture

· Designed and simulated a network architecture for a startup using Cisco packet tracer. Components included Data/DNS/FTP/Syslog servers, computers, switches etc.

Network Architecture for Online Game

· Proposed a network architecture along with theoretical calculations for monitoring, operation and maintenance of an online game similar to PUBG but with a much higher capacity.

Data Modeling of M/M/S Queuing system

· Designed and implemented a lossless multiple server data model with the help of a state diagram for a cinema theatre using MATLAB with various service and arrival rates. Later statistical analysis was carried out using both graphical and numerical calculations.

Image Classifier

· Built an image classifier based on Convolutional neural network using TensorFlow and python with the help of MNIST data set as input.

Technical Skills

Languages: C/C++, MATLAB, Dart, Python, Go ,BASH, JavaScript, LaTeX.
Databases:MySQL, MongoDB, Mongoose, PostgreSQL.
Web Frameworks and Languages:HTML/CSS, JSON, Bootstrap,Flask, Nodejs, Expressjs, Flutter, YAML.
Developer Tools and Cloud Technologies: Git, Git-Lab, Docker, Redis, Anaconda, Kubernetes, HELM, Kustomize , Openstack, Terraform, AWS.
Data Science Libraries: Pandas, NumPy, Matplotlib, Scikit Learn, Tensorflow, Transformers.
IOT devices and OS: Arduino, Raspberry pi, Onion Omega2+, Linux(Kali and Ubuntu),Windows, ROS(Robot operating system).
Networking Tools: Cisco Packet Tracer, Openflow,TCP dump,Wireshark, Transport, Basics of P4. layer protocols (TCP,UDP),Internet Layer Protocols (IPV4&IPV6),SNMP,DNS and ARP
Blockchain Technologies: Ethereum(smart contract, Secret Store development, Ocean Protocol),Bitcoin
MS Office: Excel, PowerPoint, Word

Achievements

Merit Scholarship by Swedish Government Jan 2019

· Awarded 50% fee wave in Master's Education in Sweden due to outstanding grades from Bachelor's Education.

MSME by Government of India Feb 2018

· Selected for National Level Idea pitching for startups by Government of India for my idea of "SMART EAR PODS".

International Maths Olympiad 2013

· Attained 126th rank in India for International Maths Olympiad.

Extra Curricular Activities and Hobbies

Student Ambassador for Blekinge Institute of Technology, Sweden. Sep 2020

Volunteer at XP 2020 Agile Alliance, Software Community Jun 2020

Student President for Entrepreneurship cell, JNTU Hyderabad Mar 2017 – Dec 2018

DIY RC plane making

DIY watch making and engineering

Riffle Shooting - Semi professional level

Professional Cricket and Table Tennis player