

Mrinaal Dogra

SENIOR ENGINEER · SAMSUNG R&D INSTITUTE BANGALORE-INDIA

☎ (+91) 91498 06473 | ✉ mrinaal.dogra19@gmail.com | 🏠 mrinaald.github.io | 📷 mrinaald | 🌐 mrinaald

Education

Year	Degree	Institute	CPI/%
2015-2019	B.Tech Computer Science and Engineering	IIT Kanpur	9.0/10.0
2015	All India Senior School Certificate Exam(CBSE)	KV No.2 Jammu Cantt.	94%
2013	All India Secondary School Exam(CBSE)	KV No.2 Jammu Cantt.	10.0/10.0

Skills

Programming	Python, JAVA, C/C++, Shell Script(Bash), LaTeX
Libraries	Tensorflow, Scikit-learn, DeepLearning4Java(DL4J), Flask, MPICH C++, OpenCV, CUDA C/C++
Software & Tools	Android Studio, Git, Perforce Helix Core, GDB, ROS
OS and Platforms	Linux, Windows, Raspberry-Pi, Arduino
Languages	English(Fluent), Hindi(Native Speaker)

Work Experience

Samsung R&D Institute Bangalore

Bangalore, India

SENIOR ENGINEER, MACHINE LEARNING

Mar 2021 - Present

- Working closely with remote team in HQ(S.Korea) for continuous development and improvement of the current ongoing project.
- Adept in identifying development issues, brainstorming solutions, and constantly improving solutions via testing and feedback.
- Submitted a technical research paper related to the App recommendation project from last year in **IEEE ICSC 2022**
- Has been an inventor of two patents for which the provisional patent specification is filed.

ENGINEER, MACHINE LEARNING

June 2019 - Feb 2021

- Actively contributed in **Robotic Camera Visualization** project. Major contribution involve creating a 3D Point-cloud representation from raw Time-of-Flight (ToF) camera data in android using Android OpenGL library, and implemented 3D Zoom, Pan and Rotation Gesture UI elements.
- Major contributor in **App Recommendation** project where developed NN model needs to be trained in a **Federated Learning** environment. Project involved training NN model in Java using its DL4J library, and development of android User Trial(UT) application supporting on-device model training and inference. UT App was deployed and evaluated by 100+ SRIB internal users who were satisfied with the recommendations.
- Developed projects while following **Scrum** and **Kanban** agile software development processes.
- Ensured development of high-quality code by following **SOLID design principles** and diligently participating in code reviews.
- Participated in industry level training on the latest advancements in agile development and new technologies.

Samsung R&D Institute Bangalore

Bangalore, India

UNDERGRADUATE ML DEVELOPER INTERNSHIP

May 2018 - July 2018

- Developed a NN-model to predict the current location of a user based on their most recent known location and the time of the day.
- Created a simulated environment for eNodeBs' placement and developed a probability-based classification model to predict which eNodeB the user is connected to at any time of the day based on their most recent known location.
- Proposed strategies to re-compute and update the probabilities on the fly in the final model.

Hike Private Limited

New Delhi, India

UNDERGRADUATE ML DEVELOPER INTERNSHIP

May 2017 - July 2017

- Implemented Convolutional Neural Network (CNN) models using Tensorflow to classify images into three different categories – memes, quotes, and personal images like selfies, family/group photos, landscape photos, etc.
- Used Transfer Learning approach to train few pre-trained models such as Inception-v3 and MobileNets, and adapted them to the required task.
- Worked with Google ML-Engine API for training the CNN models on the Google Server Machines.
- Developed a Server-Client support using Tensorflow Serving for deploying the model in production.

Projects

Humanoid Robotics Project

IIT Kanpur

CORE MEMBER, ROBOTICS CLUB

Oct. 2015 - Apr. 2017

- Implemented various algorithms such as Line Following, Object Detection and Object Tracking using OpenCV C++.
- Implemented the Speech Recognition, Chat-bot and the Integration System modules for the project HURO in the SnT Summer Camp 2016.
- Actively worked with team on Computer Vision problem statements required for participation in the competition HuroCup Fira, a robotic game and robotics benchmark problem for humanoid robots.
- Implemented Histogram Backprojection algorithm using OpenCV for improving object detection in a camera feed.

Neural Network Based Modelling and Control of Quadrotor

IIT Kanpur

UNDERGRADUATE PROJECT, PROF. INDRANIL SAHA

Jan. 2018 - May. 2018

- Implemented Neural networks to learn a quadrotor model and its dynamics, and used them to synthesize its controller.
- Simulation environment was set up comprising of Mavros, PX4 and Gazebo which was used to fly a virtual quadrotor and to collect data.
- Collected data for multiple trajectories involving straight lines, sinusoidal, and random trajectories, for training the models.

Real-time Sentiment Analysis of Video Feed

IIT Kanpur

COURSE PROJECT: INTRODUCTION TO MACHINE LEARNING, PROF. PURUSHOTTAM KAR

Aug. 2017 - Nov. 2017

- Analyzed performance of existing standard CNN networks like LeNet and MobileNet to classify user sentiment from real-time video feed.
- Proposed and implemented a smaller version of AlexNet in order to reduce model complexity.

Detecting Semantically Similar Questions on Quora Dataset

IIT Kanpur

COURSE PROJECT: NATURAL LANGUAGE PROCESSING, PROF. HARISH KARNICK

Jan. 2018 - May. 2018

- Performed literature review on the existing work for detecting semantically equivalent questions from any publicly available corpora.
- Implemented a state-of-the-art work and conducted hyper-parameter tuning for training the model on Quora dataset.
- Implemented another model using Siamese neural network architecture and achieved near state-of-the-art accuracy.
- Proposed and tested few variations of the Siamese network approach while trying to improve the test accuracy.
- Analyzed the effect of including few linguistic constraints in order to improve performance and analyzed the results.

One-Shot Learning

IIT Kanpur

COURSE PROJECT: DATA MINING, PROF. ARNAB BHATTACHARYA

Aug. 2018 - Nov. 2018

- One-Shot learning tries to solve the object categorization problem while using one, or only a few, samples of each category/class.
- Studied and implemented the state-of-the-art methods of one shot learning, especially Siamese networks and Matching Networks.
- Used the Omniglot and MNIST dataset for analyzing the effectiveness of implemented methods.

Ada to MIPS Compiler implemented in C++

IIT Kanpur

COURSE PROJECT: COMPILER DESIGN, PROF. SUBHAJIT ROY

Jan. 2018 - May. 2018

- Implemented an Ada to MIPS compiler using C++ as the source language of the compiler.
- Implemented language features include Basic Arithmetic operations, Range Operator, Constant Variables, Fixed size Arrays with upto two dimension support, If-Else and If-Else-Else conditionals, Switch cases, Simple for, while, and do-while loops, Procedures(Functions) and Recursions, Packages(Classes) supporting any number of data members as well as objects of other packages, and Package level Methods.
- Basic Integer and Character data types were supported for all implemented features.

Multi-user P2P Video Conferencing Web Application

IIT Kanpur

COURSE PROJECT: COMPUTER NETWORKS, PROF. DHEERAJ SANGHI

Aug. 2018 - Nov. 2018

- Implemented a video conferencing web application capable of handling multi-stream video feeds of many users.
- Application supported peer-to-peer communication and multiple conference rooms, each room capable to run an independent conference.
- Used webRTC communication technology to enable real-time media communication between peers connected in a conference room.

HealthCare DApp

IIT Kanpur

COURSE PROJECT: BLOCKCHAIN TECHNOLOGY AND APPLICATIONS, PROF. SANDEEP SHUKLA

Aug. 2019 - Nov. 2019

- Decentralized Application (DApp) implemented using Ethereum Blockchain platform to keep patients' and doctors' data at a health center.
- Application allows a patient to maintain their medical data and reports securely using blockchain technology.
- Patients were given full control over their data, and only they had the power to grant access of their data to any doctor.
- Application also supported appointment bookings, where a patient can book an appointment with a doctor one-week in advance.

N-Body Simulation in CUDA

IIT Kanpur

PROJECT UNDER ACA (ASSOCIATION OF COMPUTER ACTIVITIES)

Jan. 2016 - May 2016

- A simulation of dynamical system of a large number of particles, moving under the influence of gravity.
- Used the CUDA API along with C++ for parallel implementation of the simulation on a Nvidia GPU.
- Implemented the visual realization of the simulation using the OpenCV library in C++.

Relevant Coursework

ONLINE COURSERA

Robotics	Aerial Robotics(Prof. Vijay Kumar, UPenn), Computational Motion Planning(Prof. CJ Taylor, UPenn)[ongoing]
Machine Learning	Sequence Models(Prof. Andrew Ng), Hyperparameter Tuning, Regularization and Optimization(Prof. Andrew Ng) Machine Learning(Prof. Andrew Ng)

UNDERGRADUATE

Computer Science	Operating Systems, Computer Networks, Parallel Computing, Data Structure & Algorithm, Advanced Algorithms, Compiler Design, Computer Systems Security, Introduction to Software Engineering, Blockchain Technology
Machine Learning	Introduction to Machine Learning, Natural Language Processing, Data Mining, Computational Cognitive Science
Others	Introduction to Electronics, Introduction to Electrical Engineering, Neurobiology

Awards and Achievements

2021	SPOT Award , Samsung R&D Institute Bangalore	Bangalore, India
2020	Clean Code Culture Award , Samsung R&D Institute Bangalore	Bangalore, India
2020	Samsung Citizenship Award , People & Process - Commitment, Samsung R&D Institute Bangalore	Bangalore, India
2018	Academic Excellence Award , 2017-18 Academic Year, Dept. of Computer Science and Engineering	IIT Kanpur

Positions of Responsibility

2019	Mentor , Project under Association of Computer Activities (ACA)	IIT Kanpur
2018	Teaching Assistant , Course: Data Structures and Algorithms	IIT Kanpur
2017-18	Event Manager , Robogames Techkriti'18	IIT Kanpur
2016-17	Student Guide , Counselling Service	IIT Kanpur
2016-17	Secretary , Robotics Club	IIT Kanpur
2016	Mentor , Project under Robotics Club Winter Camp 2016	IIT Kanpur