Mrinaal Dogra

SENIOR ENGINEER · SAMSUNG R&D INSTITUTE BANGALORE-INDIA

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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, 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.

ENGINEER, MACHINE LEARNING   *June 2019 - Feb 2021*

- Actively contributed in Time-of-Flight(ToF) Android Camera Application. Major Contribution involve creating a 3D Point-cloud representation from raw camera data in android using Android OpenGL library, and implemented 3D Zoom, Pan and Rotation Gesture UI elements.
- Major contributor in Proof-of-Concept project where a NN model needs to be developed and 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 Group   *IIT Kanpur*
CORE MEMBER, UNDER DEAN OF RESEARCH & DEVELOPMENT   *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 Arithematic operations, Range Operator, Constant Variables, Fixed size Arrays with upto two dimension support, If-Else and If-ElseIf-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.

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*
2019	**Professional Programming Certificate,** Professional Programming Test, 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*