Adarsh Pal Singh

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EDUCATION

IIIT HYDERABAD
B.Tech. and M.S. by Research
Electronics and Communication
Expected Graduation: May 2020
Cumulative GPA: 9.27/10

RELEVANT COURSES

Computer Vision
Statistical Methods in AI
Algorithms & Operating Systems
Data Warehousing & Data Mining
Communication Networks
Linear Algebra & Graph Theory

ACHIEVEMENTS

- The only **undergrad speaker invited by Linux Foundation** to deliver talks at the Open Networking Summit, Amsterdam 2018 & OPNFV Plugfest, Paris 2019.
- Recipient of the **Gambia Community Award** for contributions to OPNFV.
- **World Rank 24** at American Astronautical Society and NASA's annual global competition, CanSat 2018.
- **Dean's List 1** for semesters 3 to 8.
- **Research List** award for publishing an IEEE paper during my undergraduate.
- **AIR 40** in the National Creativity Aptitude Test (NCAT), 2015.

POSITIONS

- **Research Assistant** in IIIT-H for Aug 2019 - Apr 2020.
- **Teaching Assistant** for Embedded Hardware Design course.
- **Coordinator** of Pulsation 2018, an umbrella term for hardware events at college's annual festival, Felicity.

SKILLS

PROGRAMMING

Day to Day:
Python • C/C++ • Bash
Familiar:
Golang • MySQL • Matlab

TECHNOLOGIES

Worked on/with:
Linux • Azure DevOps • Ansible • Docker • Kubernetes • GKE • CI/CD • Machine Learning • Internet of Things

EXPERIENCE

ERNST & YOUNG | Machine Learning & DevOps Intern

May 2019 – August 2019 | Bangalore, India

- Worked on the problem of clustering in high dimensional sentence embeddings (BERT, USE, XLNet). Also worked on optimizing the time and space complexity of some core algorithms like Nearest Neighbor for large databases.
- Implemented a CI/CD pipeline from scratch in Azure DevOps for an end-to-end Docker-based deep learning application.

LINUX FOUNDATION | Edge Cloud Networking Intern

May 2018 – December 2018 | Remote LFN Intern (OPNFV Project)

- Implemented a kubernetes-based small-footprint edge cluster supporting cloud-native framework and developed exemplar microservice apps for it.
- Developed a demo for ONS-18 which involved containerizing a real-time YOLOv3 object detector for this edge and GKE (with Nvidia P100 GPU) to highlight the pros and cons of an edge-cloud collaborative paradigm.

RESEARCH EXPERIENCE

SPCRC LAB | MS Research Student

May 2017 – Present | IIIT Hyderabad, India

- Pursuing research under Dr. Sachin Chaudhari on the application of Machine Learning towards smarter Internet of Things.
- Published two papers- one on the problem of offloading trained ML models to constrained sensor nodes for data transmission reduction and another on ML-based human occupancy estimation in rooms using non-intrusive sensors.

NTNU INTERNET OF THINGS LAB | Research Intern

May 2018 – June 2018 | NTNU Trondheim, Norway

- Worked under Prof. Stefan Werner and Dr. Frank Kraemer on robust machine learning-based IoT systems that work on a collaboration of edge and cloud. Also explored the problem of transfer learning in ML-based IoT applications.

SELECTED PROJECTS

Web App Deployment On RPi K8s Cluster | python, ansible, ci-cd

- Implemented a versatile Ansible script to automate the process of kubernetes cluster formation out of 2 or more Raspberry Pi 3 devices.
- Built a web app of my personal website using Flask and implemented a CI/CD pipeline for it in Jenkins. The CI pipeline Dockerized the updated code from GitHub and the CD pipeline deployed the app on the cluster.

Hand Segmentation Using RefineNet | python, cnn, pytorch

- Implemented RefineNet based on Res101 in PyTorch and trained on Pascal Person-Parts dataset with a new classification layer of hands/no-hands.
- Fine-tuned this model on 4 different ego-centric hand datasets to achieve an mIoU of ~0.7 for semantic hand segmentation.

Symmetric Matrix Algebra In Eigen | c++, template, polymorphism

- Implemented a new C++ class on top of the Eigen library to optimize the memory and time complexity of algebraic operations for symmetric matrices.
- The code exhibits the use of templates coupled with operator overloading.

PUBLICATIONS

- Embedded Machine Learning-Based Data Reduction in Application-Specific Constrained IoT Networks, accepted in ACM SAC 2020.
- Machine Learning-Based Occupancy Estimation Using Multivariate Sensor Nodes, IEEE Globecom (CCNCPS), December 2018.