Animesh Narayan Dangwal

animesh@ucsb.edu • drholmie.github.io

Education

University of California Santa Barbara, USA **2021 - *Present***
PhD in Computer Science, Distributed systems and Edge computing
CGPA: 4.0/4.0

PES University, Bangalore, India **2016 - 2020**
Bachelor of Engineering, Computer Science and Engineering
CGPA: 9.01/10

Experience

Graduate Student Researcher, RACELab, UC Santa Barbara **2021 - *Present***
Advised by Dr. Chandra Krintz and Dr. Rich Wolski
- Disaggregation of resources for FAAS programming
- Distributed analytics for wildlife conservation

Research Assistant, DREAMLabs, Indian Institute of Science **2020 - 2021**
Worked on distributed edge storage and emulation of edge deployments
- ElfStore: Developed distributed storage and consistency for edge devices such as raspberry pis, nanos, etc
- UltraViolet: Developed large scale docker deployments and network configurations to emulate IoT architectures

GSoC Student, CERN **May - August 2020**
Developed and designed a local replica of JAliEn central services for research and development. Containerised JAliEn, ALICE's grid computing middleware, using docker deployments for developers to perform local testing and development. Accepted as Google Summer of Code proposal for the CERN ALICE project. Report can be found here

Intern, Microsoft Innovation Labs, PES University **June - July 2017**
Group project in the domain of IOT Transportation, mentored by graduate students
- Developed android app, which redirects users depending on the flooding of a road, acts as a crowdsourcing app to gather information about potholes through NGO's.

Teaching and Mentorship Experience

ERSP Mentor, Department of Computer Science, UC Santa Barbara **2021 - *Present***
The Early Research Scholars Program (ERSP) is an academic-year, team-based research apprenticeship program that places special emphasis on mentoring undergraduate students.
- Mentored a team of four UCSB Computer Science/Engineering sophmore students at RACELab
- The students designed and implemented a distributed machine learning pipeline to expedite image classification for conservation efforts at Sedgwick Wildlife Reserve, California.

Teaching Assistant, Department of Computer Science, UC Santa Barbara **2021 - *Present***
- Teaching assistant for Introduction to Computer Networking, Fall 2021, Spring 2022
- Teaching assistant for Introduction to Computer Architecture, Winter 2022

Mentor, Microsoft Innovation Labs, PES University **Summers 2018, 2019, 2020**
Mentored undergraduate interns at Microsoft's on-campus research laboratory.
Responsibilities included: pitching research projects, reducing project to deliverables, guiding students through technical challenges, maintenance of lab facilities, and organizing events and hackathons.

- ***Approximately Private, Privacy Preserving Machine Learning*** **Summer 2020**
  - Mentored a team of three. We implemented a machine learning architecture based of the works of Deep Secure, focusing on speeding up garbled circuits with approximations in bit precision, cordic iterations and explorative pruning of the model.

- ***Apathetic ML, Distributed Containerized Machine Learning*** **Summer 2019**
  - Mentored a team of four, we implemented deployments for random forests, K-means clustering, regression, and neural networks using kubernetes and RabbitMQ.
- ***Forget-Me-Not, Caretaker Assistance App*** **Summer 2018**
  Mentored a team of seven, we developed an Android app (Forget-Me-Not), to help memory impaired patients and their caretakers.

Open Source Experience

Contributor, JAliEn **May 2020 - *Present***

A contributor to JAliEn, a grid computing interface made and used by the ALICE project at CERN

Contributor, IBM Qiskit **July 2019 - *Present***

A contributor to IBM's quantum computing library qiskit-terra. Also a member of the Qiskit Advocate group, it is a global program that provides support to the individuals who actively contribute to the Qiskit Community.

Projects

Scalable privacy preserving federated learning **October - December 2021**

Modified federated learning algorithm with novel load balancing mechanisms to scale deployments and speed up privacy preserving protocols. The systems handles asynchronous clients and can accommodate slow devices.

Role based, privacy preserving system for edge computing **December - July 2020**

Using novel variations of, Oblivious Transfer, a privacy preserving algorithm to optimise its usage in edge computing for maintaining privacy and security.

Novel algorithm for Byzantine fault tracing and tolerance **August - December 2019**

Using blockchain, memory maps, and code watermarking, we detect byzantine faults over a deployment of distributed systems

Publications

Helmet Design to Detect Drowsiness of Workers On-site Using EEG and RF Classifier

Sameer Raju Dhole, Amith Kashyap, ***Animesh Narayan Dangwal****, Rajasekar Mohan*

Workshop on Industrial Applications of Internet of Things (IAIoT)-2019 held during the 2nd International EDI40-2019 conference, May 2019, Belgium.

Awards and Accolades

Summer Graduate Student Researcher Fellowship **2022**

Awarded to student researchers of high academic standing for summer research at UCSB

Academic Excellence Fellowship **2021**

Awarded to students of high academic standing at UCSB

IEEE CCEM Pre-Conference Workshop, Best Student Project Award **March 2020**

Awarded the **Best Student Project** for "Doctor's Scribe", an application to help doctors reduce time spent on reading and writing long reports by recording, summarising and auto-filling reports.(Paper in the works).

C.N.R. Rao Scholarship **2017, 2018**

Awarded to the **top 20%** of the entire Computer Science Batch of 2016 - 2020. Won the scholarship in 2017, 2018

Hackathons

GE Healthcare Hackathon **February 2020**
- Finished **top-five** and received goodies and prizes worth around 10,000 INR.

Code Gladiators IoT Hackathon by Times of India and Jio **June 2019**
- **First runners-up** in the Code gladiator hackathon in the IoT theme and received 125000 INR

Power of Connected Hackathon by Honeywell **October 2018**
- **First place winners** and received team prize of 100000 INR

Gridlock Hackathon by Flipkart **July 2017**
- Finished in the **top-five**

Activities

Member of Information Security, Forensics and Cyber Resilience Lab, PES 2018 - 2020
Member of Cloud Computing and Big Data Lab, PES 2018 - 2020
Diploma in Tabla 2010 - 2014
Completed requirements for teaching Tabla
- Practiced Indian classical Tabla and studied music theory at Bharathi Vidya Bhavan, Bangalore, India
- Performed in multiple on-stage concerts

Technical Skills

Programming: Python, Bash, JavaScript, Java, C, Rust, Go, MySQL, PostgreSQL, MongoDB

Software: Zookeeper, AWS, Google Cloud, Firebase, Docker, Kubernetes, Hadoop, Spark, Qiskit, Linkerd, Kafka, Pulumi