ANIKET S. SHIRKE

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INTERESTS

Computer Systems
Computer Vision
Mobile Computing

EDUCATION

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

MS in Computer Science
GPA: 4.00/4 | Graduating in May `21
Thesis: High Throughput Livestock Monitoring using Computer Vision

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

Bachelor of Technology
Computer Science and Engineering
GPA: 9.00/10 | Graduated in Aug `19
Thesis: Simulation of Distributed Learning on Edge for IoT

TECHNICAL SKILLS

LANGUAGES

Python • C++ • SQL • P4-14 • Java • C • Bash • MATLAB • Racket • Prolog • HTML/CSS • AngularJS

SOFTWARE

Docker • Mininet • Kafka • Mosquitto • Android • LaTeX • Git

RESPONSIBILITIES

TEACHING ASSISTANT

• System Programming | Fall 2019
• Data Structures and Algorithms | Fall 2018
• Computer Networks | Spring 2018
• Computer Programming and Utilization | Spring 2019 | Fall 2017

MENTORSHIP

Mentored 9 students for their academic concerns, and helped them cope with the curriculum for the academic year 2019

MS COURSEWORK

Real-Time Systems
Internet of Things**
Machine Learning**
Computer Vision**

LINKS

https://www.linkedin.com/in/aniketshirke/
https://github.com/ani8897

WORK EXPERIENCE

SOFTWARE ENGINEERING INTERN | GOOGLE — MAY `20 - AUG `20

- Worked with the Search Ads Experimentation team to estimate the latency in disabling experiments running across 20 production data centers worldwide
- Based on the **Publish-Subscribe** paradigm, designed system to decrease this latency in order to **minimize revenue loss** due to experiment crashes
- Validated the design by implementing a prototype and conducted a load test to bring down the disabling latency from **5 minutes** to **1 second**

SUMMER ANALYST | GOLDMAN SACHS — MAY `18 - JUL `18

- Aided the **Realty Management Department (RMD)** in tracking data file uploads to databases by implementing a live web application in **Slang** and **AngularJS**
- **Boosted employee productivity** by providing transparency to the underlying system procedures and minimizing the effort to approach the RMD Technology Team
- **Received a return offer** for exemplary internship work

ENGINEERING INTERN | FOCUS ANALYTICS — DEC `17

- Developed a **Map Reduce** job-based system for evaluating reach-estimation of users by implementing clustering techniques such as **DBSCAN** and **Gaussian Mixture Models**
- Tracked live progress on a web panel asynchronously by using **MQTT protocol**
- Completed a literature survey of different NoSQL databases and carried out stress testing of **Dgraph**, an open-source graph database

KEY RESEARCH PROJECTS

REAL-TIME LIVESTOCK ACTION RECOGNITION USING EDGE COMPUTING | Advisor: Prof. Matthew Caesar — Jan `20 - Present

University of Illinois at Urbana-Champaign

- Pioneering the project under the **Center for Digital Agriculture** by working in close collaboration with the **Animal Sciences** department at UIUC in building a real-time computer vision system to query live surveillance feeds of animals
- Alleviated the problem faced by Animal Science researchers in manually annotating data videos by training deep learning models, such as LRCN, C3D and TSM, to **auto-annotate actions** carried out by pigs with an accuracy of 95%

A SIMULATOR BASED APPROACH FOR DISTRIBUTED LEARNING ON EDGE | Advisor: Prof. Umesh Bellur — Jul `18 - May `19

Indian Institute of Technology, Bombay

- Built a Python-based simulator for simulating the functionality of Edge devices to train **Air Quality Index prediction** and **MNIST** models in a **federated learning** setup for various **distributed computing hierarchies**
- Containerized code execution using **Docker** to simulate the **resource constraints**, in terms of computational capability and memory allocated

EXPLORING P4 LANGUAGE FOR PROGRAMMING NETWORK SWITCHES | Advisor: Prof. Purushottam Kulkarni — Jan `18 - Jun `18

Indian Institute of Technology, Bombay

- Devised and simulated **proactive and reactive** communication between switches to build a **Distributed Stateful Load Balancer** application in P4-14
- Experimented with varying network traffic generated using **Scapy** in Python
- Proposed an annotation based language to **aid application development** in P4

PUBLICATIONS

[1] A Distributed Learning Simulation Platform for Edge Hierarchies ^^
Accepted at the 12th International Conference on Communication Systems & Networks 2020

[2] pcube: primitives for network dataplane programming ^
Presented at P4WE workshop, IEEE ICNP 2018 in Cambridge University (Awarded Travel Grant by IEEE)

[3] Finding by Counting: A Probabilistic Packet Count Model for Indoor Localization in Bluetooth Low Energy Environments ^^^
Accepted in ACM WiNTECH workshop, MobiCom 2017

** Awarded A+ for exceptional performance in the course.

Count of ^ indicates author rank