

EXPERIENCE

- **University of Wisconsin-Madison** Madison, WI
Graduate Teaching Assistant Aug 2021 - Present
 - **Programming III:** Assisting students and teams who are struggling with advanced data structures and algorithms. My responsibilities include developing weekly practical assignments and delivering guest lectures.
- **Microsoft Research** Bangalore, IN
Software Engineer Feb 2018 - Present
 - **Blockchain:** Worked on building backend for Blockene, a high throughput blockchain protocol running on mobile devices. Improved performance by 25% to over 1000tps and deployed a solution for sybil attacks using mobile TEE
 - **Flask Web Framework:** Developed and deployed a Project Management System for NGOs to make philanthropic donations more transparent and accountable using the above blockchain protocol.
 - **Intel SGX:** Developed a Practical and Secure DNN Inference Service using Intel SGX in C++. I lead the effort to discover, analyze, solve and implement access-pattern based side-channel attack on the system.
- **Singapore Management University** Singapore
Research Assistant Jun 2016 - Dec 2016
 - **Lifestyle Analytics:** Developed a system to identify item interactions of customers in a retail store through sensor data fusion from smartwatches, smartphones and distributed BLE beacons. Presented our work in ISWC '18.
 - **Side Channel Attack:** Explored the possibility of using the inertial sensor data obtained from a smartwatch as a side-channel to infer what is being typed on the smartphone. Presented our work in WristSense Workshop '17.
- **Nexleaf Analytics** Los Angeles, CA
Full Stack Developer May 2015 - Sep 2015
 - **Ruby on Rails:** The Coldtrace Project aims to bring real time transparency into vaccine supply chains. A smartphone is placed inside a refrigerator with medicines which communicates with the sensors to monitor the internal conditions. Developed a dashboard which shows real time information from the smartphones.
 - **Android:** Developed an App Manager for the smartphone which relays data to and from the central server. Implemented compression techniques and partial requests to address problems of unreliable network conditions.
- **Backpack Labs** New Delhi, IN
Full Stack Developer May 2014 - Mar 2015
 - **Ruby on Rails:** Backpack is a Learning Management System built for instructors. Lead the development of two product features from conception to production release. Implemented web caching to speed up the website.
 - **Android:** Developed the Android App supporting all the features of the website. Enabled offline support using SQLite databases. Integrated Google Analytics and supported greater than 500 daily sessions.

PUBLICATIONS

- Sambhav Satija, Apurv Mehra, Sudheesh Singanamalla, **Karan Grover**, Muthian Sivathanu, Nishanth Chandran, Divya Gupta, Satya Lokam. Blockene: A High-throughput Blockchain Over Mobile Devices. In OSDI 2020: USENIX Symposium on Operating Systems Design and Implementation.
- **Karan Grover**, Shruti Tople, Shweta Shinde, Ranjita Bhagwan, Ramachandran Ramjee. Privado: Practical and Secure DNN Inference. CoRR abs/1810.00602
- Sougata Sen, Archan Misra, Vigneshwaran Subbaraju, **Karan Grover**, Meera Radhakrishnan, Rajesh Krishna Balan, Youngki Lee. I4S: capturing shopper's in-store interactions. In ISWC 2018: Proceedings of ACM International Symposium on Wearable Computer.
- Sougata Sen, **Karan Grover**, Vigneshwaran Subbaraju, Archan Misra. Inferring smartphone keypress via smartwatch inertial sensing. In WristSense 2017: IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops).
- **Karan Grover**, Vinayak Naik. Monitoring of Android devices using SNMP. In COMSNETS 2016: 8th International Conference on Communication Systems and Networks.

PROJECTS

- **Dockerized SDN Switch using P4 Language:** Implemented a L2 Switch and Router in a mininet network using P4 Programming Language. Also implemented the switch in docker to create a ready-to-use docker image.
- **Automatic Video Annotation for Cricket Videos:** Developed a system for auto annotation of cricket videos from video and commentary text. Developed a Question-Answer system on top to answer questions about the cricket match.
- **Linux File System Emulator using C++:** Implemented basic commands in C++ to read, write and move files in linux while enforcing permissions. Implemented custom ACLs to override DAC using setuid(and related) system calls.
- **SDN Switch using POX in a mixed topology:** Implemented Firewall, Packet Analyzer, Load Balancer and L2 Switch using POX Controller and tested them on multiple topologies on the Mininet Network Emulator

AWARDS AND ACHIEVEMENTS

- **Winner, Securing the Grid Hackathon:** Organized by Ministry of Power in the Government of India. A 'Capture The Flag' event in which we were supposed to break into a SCADA system.
- **Winner, Hack InOut, SVNIT:** Biggest Community Hackathon in India with over 50 teams participating. Built a voice layer over Google Search that could answer users' queries over phones. Developed for rural areas with no internet.
- **Winner, Hardware Hackathon:** Developed Smart Plant Pots using Raspberry Pi which alert their owners about watering them based on soil humidity and weather prediction.

POSITIONS OF RESPONSIBILITY

- **Mentor, Rails Girls Summer of Code:** Mentored a team of 2 students in their Open Source contribution to OpenLMIS project for a period of three months.
- **Representative, Student Council:** As the member of the Student Council, I started a weekly mentorship program in my university where senior students can volunteer to mentor junior students in their academics.
- **Speaker, Open Source Developer Conference:** I conducted a two hour workshop for students in Delhi on the basics and internals of Git. Helped around 150 students collaborate on their first project through Github.
- **Organizer, Mid Semester Hackathon:** Helped Organize the Mid Semester Exam in the form of a hackathon for the course CSE 648: Privacy and Security in Online Social Media.

EDUCATION

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| • University of Wisconsin-Madison
<i>MS in Computer Science</i> | Madison, Wisconsin
<i>Aug 2021 – Present</i> |
| • Indraprastha Institute of Information Technology
<i>Bachelor of Technology in Computer Science</i> | Delhi, India
<i>Aug 2013 – Dec 2017</i> |