Karan Grover

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Experience

- **Meta (Facebook)** — New York
  Software Engineering Intern — *May 2022 - August 2022*
  - **AI Infrastructure**: Worked with Facebook's AI Infrastructure team to build a common inference service for all teams at Meta. This service allows ML Engineers to deploy various types of ML models in ensemble.
  - **A/B Testing**: Developed the backend for the A/B Testing framework for Facebook's Inference Service using Python and C++. Took the framework's development from design to production.
- **Microsoft** — Bangalore, IN
  Software Engineer — *Jan 2018 - June 2021*
  - **Azure Confidential Computing**: Developed a cloud-native secure and scalable ML solution using Intel SGX in collaboration with Azure. Lead the effort to discover, analyze, solve and implement access-pattern based side-channel attack on the system.
  - **Azure Blockchain Service**: Worked on building backend for Blockene, a high throughput blockchain protocol running on mobile devices in collaboration with Azure. I was responsible for implementing distributed systems protocols like gossip and consensus algorithms.
  - **Fullstack Development**: Developed a Project Management System for India's largest Non-Profit Organization - Child Fund India. Developed APIs and services allowing the organization to keep track of projects and funds transparently.
- **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 via machine learning using sensor data 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 using machine learning. Presented our work in WristSense Workshop '17.
- **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

- **Fault Tolerant Collective Communication**: Pytorch uses Gloo library for collective communication during distributed training. Right now if the communication fails, the whole process comes to a halt. We modified the Pytorch and Gloo library to make this process fault tolerant.
- **Cloud Native LevelDB**: LevelDB is a key-value store based on LSM Trees. In this project we made it cloud native leveraging Amazon S3 as the backend. We developed a naive implementation and then tuned it to be 3x faster using Distributed Systems concepts.
- **Disaggregated Memory**: In this project, we demonstrated the promise of Disaggregated Memory for certain applications. We implemented a B+ Tree - underlying data structure in a database - on disaggregated memory connected by RDMA.
- **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.

POSITIONS OF RESPONSIBILITY

- **Teaching Assistant, University of Wisconsin-Madison**: Helped design the assignments, grade projects and held office hours for the Data Structures and Algorithms course at the University of Wisconsin-Madison for two years.
- **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**: 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**: 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.

Education

- **University of Wisconsin-Madison** Madison, Wisconsin
  MS in Computer Science *Aug 2021 – Present*
  - **Courses**: Advanced Systems for ML, Distributed Systems, Introduction to AI, Big Data Systems, Topics in Databases, High Performance Computing, Intro to Information Security, Programming Languages and Compilers
- **Indraprastha Institute of Information Technology** Delhi, India
  Bachelor of Technology in Computer Science *Aug 2013 – Dec 2017*
  - **Courses**: Software Defined Networking, Security Engineering, Network Security, Wireless Networks, Analysis and Design of Algorithms, Operating Systems, Fundamentals of Databases

Skills

- **Languages**: C++, Python, Java, Javascript, Bash
- **Technologies**: git, linux, REST, API, Relational Database, noSQL, HTML, Azure, AWS, Pytorch, Tensorflow, CUDA, Apache Spark, Hadoop, GRPC, Flask, Ruby on Rails, Docker, Kubernetes