# Saksham Chitkara

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## EDUCATION

**CARNEGIE MELLON UNIVERSITY**
Master of Science
Information Security - Systems Track
August 2017 - May 2019 | Pittsburgh, PA

RELEVANT COURSEWORK
- Research : Ubiquitous Computing
Advisor : Dr. Mayank Goel
- Distributed Systems
- Computer Systems - [TA Fall 2018]
- Parallel Computer Programming
- Infrastructure for Machine Learning
- Machine Learning
- Green Computing - Audited
- Usable Privacy and Security

**SRM UNIVERSITY**
Computer Science Engineering
Aug 2012-2016 | Chennai, India

## SKILLS

Programming Languages
Java (JUnit) • Python • C
C++ • Matlab • Go • Assembly

Tools and Frameworks
Android • Django • Cassandra
Spanner • Redis • Memcached
Git • Vim • Shell Scripts • LaTeX

## CONFERENCES

• ACM SOUPS 2018
- Poster - Usability of Crypto-currencies
• FTC PrivacyCon 2018
- Speaker on Smartphone privacy
• ACM Ubicomp 2017
- Why Does this App Need My Location?
- Acceptance (< 20%) | Top 5% paper
• CMU CyLab Conference 2017
- Poster - Protect My Privacy
• DARPA Brandeis 2017
- Topic: Privacy-Enhanced Android
• CMU Privacy Day 2017, 2018
- Poster Presentation - PrivacyProxy

## FELLOWSHIPS

• Prabhu and Poonam Goel Fellowship , (1 of 34 students in MSIS 2017)
@ Carnegie Mellon University
• India's Best Brains 2014, 3 in 3700

## EXPERIENCE

**GOOGLE INC** | Software Engineering Intern
Google Product Infrastructure | May 2018 - Aug 2018 | Mountain View, CA
- Implement a user-facing search API using Structured Spanner to lookup OAuth information by brand name and allow special operator search.
- Achieve a speed up from ~150 secs to ~90 secs by async execution of tasks.

**CARNEGIE MELLON UNIVERSITY** | Research Associate
School of Computer Science | Jan 2016 – June 2017 | Pittsburgh, PA
- Worked on Research papers (see below) and lead the CMU team to develop Privacy-Enhanced Android, a DARPA and Google funded project.

## RESEARCH

**BLE SMART RING** | Independent Study | Ubiquitous Computing
- 3D printed a ring, which collects bio acoustic feedback using an Inertial Measurement Unit and a trackpoint and transmit it via BLE.
- Train a machine learning layer to do hand gesture recognition. Integrate gestures and trackpoint to control Hololens and Google VR.

**WHY DOES THIS APP NEED MY LOCATION?**
Ubicomp 2017 | First Author | Featured Paper | Acceptance Rate < 20%
- Designed and built a Context-Aware library based permission model for Android which tells the users the purpose of the private data accesses providing 25% better protection, 30% reduced decisions.
- `https://dl.acm.org/citation.cfm?doid=3139486.3132029`

## PROJECTS

**OPTICAL HEART RATE MONITOR** | Mobile Systems
- Monitor the heart rate by illuminating user's finger via camera flash and detecting changes in blood volume (PPG). Error Rate < 5% of Ground Truth.

**PROTECT MY PRIVACY** | DARPA funded | 30,000+ downloads
- Built an end-to-end app, which collects, enforces and transmits the user's privacy decisions on other apps and third-party libraries (root permission).
- Implemented a Firewall which blocks Wifi and mobile data on a per app basis by interacting with the Android Kernel using iptables.

**DISTRIBUTED CONSENSUS - RAFT** | Distributed Systems
- Implemented Raft to achieve Distributed Consensus. Implementation was robust, fault-tolerant in case of Network Partitions or multiple leaders.

**CRYPTOCURRENCY LEDGER** | Distributed Systems
- Implemented a Distributed ledger to keep track of proof-of-work for cryptocurrencies. Built a miner to calculate the hash based on the difficulty.

**DISTRIBUTED FILE SYSTEM** | Distributed Systems
- Built a Distributed File System modeled on Facebook's Haystack paper to store and retrieve images. Used multiple stores with Cassandra and Redis.

**TINY UNIX SHELL** | Systems
- Supports builtin commands, forking and handling multiple child processes running in foreground or background and I/O redirection.