

# MANAN MONGA

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## SUMMARY

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Computer Science Master's graduate, proficient in Python, Cryptography, Data Engineering, and SQL. Building and maintaining large codebases, I have done cutting edge research on data privacy and provenance at scale.

## SKILLS

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**Proficient** Python, Ruby, Rails, SQL, React-Native, JavaScript, CSS, Git, Ray, Test Driven Development, PyTest  
**Exposure** Solidity, C++, Linux, Django, Flask, Bash, AWS, PowerShell

## WORK EXPERIENCE AND PROJECTS

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### Boston University Hariri Institute For Computing

Boston, MA

Graduate Research Assistant

Apr. 2020 - Present

- Led student research team building cross-platform prototype application using **React-Native** for privacy-sensitive **electronic contact tracing** for COVID-19 for better public health and to bring students back to campus
- Researched feasible sensor technologies for detecting exposures, implemented Bluetooth Low Energy chirps to detect for mobile application to detect exposures within COVID transmission range
- Investigated popular exposure notification frameworks with MA state authorities to ensure that contact-tracing framework they bought into was secure

### Bare-Metal Marketplace

Boston, MA

Cloud Engineering Project

Jan. 2020- May 2020

- Designed an open marketplace system in an AGILE team as a series of **micro-services** for the MOC to buy and sell time on bare-metal nodes
- Architected and deployed **robust matching algorithm in Python** for the double-blind auction system
- Ensured quality code with **functional testing using PyTest** for all edge cases of bids and offers to ensure fair trading at **scale**
- Integrated backend with a SQL Database and CLI frontend with Flask to ensure end-to-end deployability

### Python SQL operator library with Provenance and Explain-ability

- Engineered an operator library in Python to work with data pipelines to perform ETL operations at scale, keep track of **data provenance**
- Deployed library in **Ray** and turned all classes into efficient, distributed actors, improved recommendation engine performance by **70%**
- Incorporated explain-ability features with **LIME** and **SHAP** and performance metrics for each operation in pipeline with metric dashboard **Jaeger**

### CryptoPiazza

- Built full stack web application as a StackOverflow for cryptography and cryptocurrencies using Ruby on Rails, JavaScript, CSS
- Integrated users, sessions, questions, answers, blogs and comments into the interface with a live cryptocurrency ticker and deployed to Heroku with storage using PostgreSQL

## EDUCATION

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### Boston University

Boston, MA

MS in Computer Science with a Specialization in Cybersecurity

GPA - 3.6

Sep. 2019 - Jan. 2021

- Active contributor to Hariri Institute, a convergence accelerator that initiates **data-driven research** for a better society
- Courses: Data Systems with **Python**, Applied **Cryptography**, Cryptography, Cryptography 2, **Cybersecurity**, Advanced **Algorithms**, **Cloud** Computing

### PES University

Bengaluru, IN

BE in Electronics and Communications

Aug. 2015 - May. 2019

- Mentored and instructed class of 30 students for subject of Pattern Recognition, mapped out course material, evaluated assignments, and led all group discussions; voted top 5 SME out of 35 by student vote <https://www.overleaf.com/project/5f9edb3a28a36c0001a1>
- Courses: : **Network Security**, **Database Security**, Neural Networks, Pattern Recognition and Classification

## PUBLICATIONS

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### Software Defined Networks as a backbone for Large Scale IoT Networks

- Published a white paper on the benefits of using a Software-Defined Networking (SDN) with virtualized network functions as a backbone for large-scale IoT at **international security conference AISD 2019**
- Developed an architecture incorporating the security benefits offered in integrating the software defined paradigm into **large-scale IoT networks** focused on security.