

Mihir Kumar

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EDUCATION **University of Illinois**, College of Engineering Urbana-Champaign, IL
Bachelor of Science (B.S.) in Computer Engineering August 2019

Coursework and Honors:

Data Structures (Honors), User-Driven Design, Digital Systems Lab, Artificial Intelligence, Processor Design, Operating Systems, Algorithms & Models of Computation, Cyber Security, Discrete Mathematics, Computer Architecture, Probability with Reliability and Engineering Applications, Linear Algebra, Analog Signal Processing, Multivariable Calculus

EXPERIENCE **University of Illinois at Urbana-Champaign** Champaign, IL
Software Intern May 2017 – August 2019

- Optimized and extended data exporting features in a **data collection and aggregation utility** called FAE Auditor. (Technologies: Django, Python, PostgreSQL, HTML, CSS, JavaScript)
- Refactored and developed the user registration system for an **in-browser web development platform** called WebEdit which allows users to develop and test custom HTML, CSS, and JavaScript code right within the browser. (Technologies: Django, Python, PostgreSQL, HTML, CSS, JavaScript)
- Created a **web crawler using Headless Chrome** based on Node.js Puppeteer library to crawl and analyze web pages for compliance with web accessibility standards. (Technologies: Node.js, JavaScript, Git)
- Designed and developed accessible open source **ARIA compliant plug-ins** for the in-browser text editor CKEditor 4 to increase accessibility on the internet. (Technologies: JavaScript, CKEditor4 API, Git)
- Developed an accessibility Test Adapter for **Windows UI Automation** framework that drives test efficiency. (Technologies: Python, C++, Git)
- Led the design and implementation of a web standard compliance test automation synthesizer for popular web browsers with **ARIA** accessibility standards on **Windows**.

The Unica Group, Pennsylvania Champaign, IL
Intern Consultant May 2016 – August 2016

- Installed, configured and developed a Docker platform on Linux to host virtualized applications.
- Developed a cloud transition strategy for complex transactional systems to drive cost efficiencies.
- Developed hybrid infrastructure design pattern for applications to co-exist between on-prem and cloud.
- Optimized application performance and developed automated regression suites for testing.

RESEARCH **Aurum (Non-Custodial Cryptocurrency Exchange)** May 2019 – August 2019

Mentor: Prof. Andrew Miller (soc1024.ece.illinois.edu)

- **Cryptocurrency exchange** – A proof-of-concept non-custodial exchange to exchange cryptocurrencies between different users or a user and a centralized exchange.
- **Improved hybrid model** – Combines ideas from the Arwen Trading Protocols and Kyber Network, two popular cryptocurrency trading protocols.
- **Expands cryptocurrency liquidity** – Uses centralized exchanges through Arwen to expand Kyber Network's liquidity pool beyond Ethereum.
- **Allows partial order fills** – Incentivizes decentralized participation by extending Kyber Network's functionality to allow partial order fills.
- **Increases market competition** - Brings decentralized and centralized exchanges on the same platform fostering competition and improving prices.

Privacy Preserving Record Linkage (PPRL) August 2015 – January 2016

Mentor: Prof. Vincent Bindschaedler (www.vbinds.ch)

- **Privacy Preserving Record Linkage** - identified records that map to the same individual from multiple databases without revealing the identity of the person and the contents of the database.
- **PPRL Regression Model** – developed a regression algorithm that indicates matches over a public voter dataset to determine real-world performance of popular PPRL protocols.
- **Using Python to develop protocols** – implemented selected PPRL protocols in Python and analyzed their runtime and accuracy using binary comparison and bloom filters.

HACKATHON PROJECT

Riskulizer (Data visualization tool to assess insurance risk)

- **Risk Analyzer** built at ORMIR/AXIS Re Future of Insurance **Hackathon** 2017
- **Visualization tool** built on top of **AXIS insurance data** to analyze insurance risk of natural calamities across various regions in the world
- Won **Best User Interface** and **runners up overall**
- Built with **Flask**, **Bootstrap** and **d3.js**

LANGUAGES TOOLS

Python, JavaScript, C, C++, HTML5, CSS3, SystemVerilog, SQL

Git, Django, Flask, Node.js, React, Express, MongoDB, Docker, PostgreSQL, jQuery