

# CHRIS SERRAO

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## EDUCATION

**University of Massachusetts Amherst, Amherst, MA**  
B.S. in Computer Science, GPA: 3.96/4

*Sept 19 - Present*

*Relevant Courses:* Introduction to Algorithms, Programming with Data Structures, Discrete Mathematics, Probability and Statistics, Linear Algebra, Operating Systems, Programming Methodologies, Multivariate Calculus, Computer Systems Principles, Practical Application of Data Management

## INTERNSHIP EXPERIENCE

### UMass URV

*June 21- Aug 21*

*Junior Research Intern. (Advisor: Kyle Doney), Space efficient Cuckoo Filter*

- Developed an intelligent cuckoo filter by training a random forest model on a dataset of phishing links to predict if a phishing link exists in the database.
- Improved the false positive rate (FPR) of the cuckoo filter from 30% to  $< 10\%$  while maintaining the property of no false negatives.

### ApTSi

*Dec 20-May 21*

*Software Engineering Intern for the Database Solutions Unit*

- Deployed a Java interface to enable communication with MinIO allowing large scale storage of photos and videos regarding medical health records.
- Built a back-end infrastructure to store a patients health check up documents, doctors medical notes and X-ray reports in CouchDB, PostgreSQL and MinIO.
- Built a Java Interface following the Master Data Management (MDM) model to allow easier communication between databases such as CouchDB, MinIO and PostgreSQL using Apache Kafka and Zookeeper.

## TECHNICAL PROJECTS

### Twitter Kafka Data Streams

*July 21-Aug 21.*

- Implemented a Kafka producer and consumer application on a Kafka cluster setup to scrape real time tweets from the Twitter API and feed into Elasticsearch.
- Implemented parallel threading to boost data transfer speed and efficiency by 5 times, as well as used snappy message compression and larger data packet sizes to give higher data throughput.

### Video Searching Application

*Aug 20-Sept 20*

- Created and deployed a fully functional ReactJS application which takes in video requests through a search bar and displays the top 10 video results.
- Enhanced user experience by using event handlers to handle keyboard inputs well as used conditional rendering to replicate a YouTube layout of the application.
- The demo can be accessed here: <https://uvrays123.github.io/youtube-clone/>

### Tic Tac Toe AI

*June 20-July 20.*

- Developed a Tic-Tac-Toe AI agent using ReactJS that uses the Minimax algorithm to decide a valid move.
- Implemented alpha beta pruning to improve the efficiency of the search algorithm by 20 times and to find the best move possible for every scenario in the game.
- The demo can be accessed here: <https://uvrays123.github.io/Tic-Tac-Toe-AI/>

### Recipe Finder Application

*May 20-June 20*

- Designed a recipe finder application to find the top 25 recipes from a total of 100K recipes. Used HTML, CSS and JavaScript to design the front-end interface and AJAX to link the user interface to a public recipe API.
- Built the search bar, user favorites, shopping list, servings, preparation time features to provide an interactive interface for enhanced user experience.

## SKILLS

**Technical:** Python, Java, ReactJS, HTML, CSS, JavaScript, AJAX, C, Octave, SQL, Git

**Frameworks and Databases:** CouchDB, MinIO, PostgreSQL, Apache Kafka, Apache Zookeeper