

# RISHI MASAND

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## EDUCATION

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### University of Illinois at Urbana-Champaign

Masters in Computer Science, B.S. in Computer Science, Minor in Business

May 2021, May 2020

**Relevant Coursework:** Applied Machine Learning, Distributed Systems, Artificial Intelligence, Computer Security, Autonomous Vehicles, Deep Learning Theory, DL in Hardware, Learning-Based Robotics, NLP with Deep Learning

## RESEARCH

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### UIUC FORWARD Lab

December 2019 - Present

- Performing NLP (Natural Language Processing) and data mining research with Professor Kevin Chang.
- Measuring quality of phrases based on traditional and custom quality metrics while leveraging NLTK and stanford-core-nlp.
- Extracting high-quality domain-specific phrases from text corpora with word embeddings (Word2Vec) and other methods.

### UIUC SRTI Lab

February 2020 - Present

- Implementing CNN to classify vehicles from a custom-generated dataset of images, using Tensorflow and Keras.

### Principles of Safe Autonomy (Autonomous Driving)

January 2020 - Present

- Detected pedestrians via YOLOv3 and tracked pedestrian paths via SORT.
- Predicted pedestrian trajectories in video using linear regression via scikit-learn and pose estimation via OpenPose.
- Leveraged ROS and Gazebo to validate motion-planning and perception algorithms.

## EXPERIENCE

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### Uptake

Software Engineering Intern

May - August 2020

Chicago, IL

- Worked on AI/ML team's data science engine to engineer natural language processing workflows.
- Developed Label Creation Workflow to assign categories to unlabeled work order records.
  - Designed and implemented algorithm to vectorize and cluster text records for label generation.
  - Leveraged scikit-learn, pandas, dask, scipy, numpy, and plotly in workflow implementation.

### Uber Technologies Inc.

Software Engineering Intern

May - August 2019

San Francisco, CA

- Implemented machine learning model and training pipeline to predict driver earnings for a driving session.
  - Leveraged Michelangelo to select and train model, tune model hyperparameters, and analyze dataset features.
  - Enabled scheduled automation for HIVE table querying, Spark dataset aggregation, and model training.
  - Deployed Random Forest model available for real-time prediction querying.
- Designed and implemented caching layer for driver earnings opportunity data platform.
  - Developed custom caching logic in Go and leveraged Redis as a high speed key-value data store.
  - Implemented extendable, persistent configuration for upstream data providers to specify caching options.
  - Configured alerting and set up monitoring dashboard to track cache metrics.
  - Achieved cache hit rate of >95% and decreased presentation service data querying latency by 75%.

### State Farm

Software Engineering Intern

January - May 2019

Champaign, IL

- Developed journey mapping web application in AngularJS for agents to track timelines of customer processes.
- Designed and implemented REST API in Go and configured PostgreSQL database for application backend.

### Caterpillar Inc.

Cyber Security Intern

May - August 2018

East Peoria, IL

- Participated in cloud-based threat modeling and penetration testing to evaluate robustness of software architectures.
- Specified set of technical controls and security suggestions for embedded Linux hardening.

### Capital One

Software Engineering Intern

January - May 2018

Champaign, IL

- Automated malware execution response data collection for Windows system with Python, Cuckoo sandbox, and syslog.
- Generated labeled dataset of system response data for machine learning driven attack prevention.

### UBS

Software Engineering Intern

July - August 2017

Weehawken, NJ

- Developed machine learning models to classify fraudulent credit card transactions using Python and R.
- Used  $k$ -NN classifier developed from scratch, Tensorflow neural network classifier, and scikit-learn decision tree classifier.

## TECHNICAL SKILLS

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**Proficient In**  
**Have Experience With**  
**Technologies**

Python, C++, Java, Swift, Golang, C, JavaScript, HTML, CSS  
Kotlin, C, SQL, Objective-C, Assembly (MPASM, MIPS, x86), PowerShell, Ruby, Thrift  
Tensorflow, Keras, PyTorch, OpenCV, ROS, Gazebo, Spark, HIVE, AWS, MongoDB, Unity  
Node.js, Express, jQuery, AngularJS, React, Raspberry Pi, Arduino, Alexa Skills, IDA Pro

## LEADERSHIP

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### UIUC CS 461 (Computer Security)

*Course Staff*

January 2019 - Present

*Urbana, IL*

- Educational Topics: Application Security, Web Security, Cryptography, Network Security, and Forensics
- Hold office hours.
- Write and grade exam questions.

### HackIllinois

*Systems - iOS Lead*

August 2018 - February 2019

*Urbana, IL*

- Lead team of student engineers developing iOS app for HackIllinois event attendees.

### UIUC CS 126 (Software Design Studio)

*Course Staff*

January 2018 - December 2018

*Urbana, IL*

- Educational Topics: Programming Style, Documentation, Testing, Debugging, Modular Design, and Design Patterns
- Lead office hours for assistance with Java and C++.
- Moderated student code review sessions for discussion of student software application implementations.
- Evaluated, critiqued, and graded student software application implementations.

### Illini Motorsports (Formula SAE)

*Engineering Project Lead*

August 2017 - May 2018

*Urbana, IL*

- Developed system in C to auto-upshift gears of vehicle to decrease shift times in competition acceleration event.
- Interacted with CAN Bus to analyze RPM, wheel speed, and other parameters to determine time to shift.

## NOTABLE PROJECTS

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### UIUC Bus

- Developed native iOS, watchOS, and Android applications to track bus departures and timings for the UIUC campus.
- Shipped apps to App Store and Google Play Store.
- Received >15,000 total downloads.
- Relied on daily by thousands of UIUC students to navigate campus and surrounding area via the CUMTD bus service.

### billboard-top-100

- Developed Node.js API (NPM package) to retrieve the top songs, albums, and artists from Billboard's music charts.
- Leveraged TravisCI to implement continuous integration pipeline to test functionality, check code style, calculate test code coverage, and publish package to NPM registry.
- Downloaded over 25,000 times and depended upon by at least 80 public GitHub repositories.
- Collaborate with open source developers to identify and resolve issues to maintain package functionality.

### carKeyz

- Designed and implemented custom wireless locking/unlocking and remote start circuit for 1997 Honda CR-V.
- Developed iOS application to interface with in-car circuit over Bluetooth.

### uiuc-food

- Scraped and processed data from various sources to build dataset of eateries in the Champaign-Urbana, IL area.
- Developed and publicly deployed dataset visualization with D3.js to display eatery information.

**More projects at:** <https://github.com/darthbatman>

## NOTABLE AWARDS

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### 1st Place

*Pulse Hardware Hackathon*

February 2020

*Urbana, IL*

- Project: PalmReader - a wearable device that converts detected text to tactile Braille.

### Grand Prize

*PYGHack*

September 2017

*Champaign, IL*

- Project: SpreadBread - an app to connect local food banks to restaurants and grocery stores with extra food.

### 1st Place

*HackRU*

April 2017

*Piscataway, NJ*

- Project: carKeyz - a smartphone controlled lock/unlock system for my 1997 Honda CR-V.

**More awards at:** <https://devpost.com/DarthAnakin>