

# Arun Krishnavajjala

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## EDUCATION

### Ph.D. Computer Science

GEORGE MASON UNIVERSITY

Fairfax, VA | Sept 2021 - Present

### M.S. & B.S. Computer Science

GEORGE MASON UNIVERSITY

Fairfax, VA | Jan 2021 / Dec 2020

## WORK EXPERIENCE

### GEORGE MASON UNIVERSITY | GRADUATE RESEARCH ASSISTANT

Fairfax, VA | May 2021-Present

- Identified research gaps in Android app accessibility for Motor-Impaired Users via a literature survey of the field
- Used **Java** and **Python** to develop **MIRACLE**, the world's first automated tool to detect motor-impairment accessibility issues in applications
- Built with **PyTorch Computer Vision**, **Pattern-Matching**, and **Static Analysis** to detect various violations in an application through screenshots and XML data
- **MIRACLE** achieved **87%** accuracy when detecting accessibility guidelines at runtime, making it a reliable tool for developers to test their applications (Target ICST '23)

### ALCON | RESEARCH & DESIGN INTERN

Fort Worth, TX | May 2021-Aug 2021

- Designed and implemented a wake-word for surgical voice assistants using **Tensorflow**, **Sagemaker**, **S3**, and current research in voice assistants after consulting with surgeons and hospitals about requirements
- Used **Python**, **Librosa**, **PyAudio**, and **PyTorch** to parse and classify windowed audio to detect the wake-word
- Achieved **80%** accuracy on wake-word detection prototype in an input stream which exceeded expectations and is now in operation room devices across the US

### INTERNATIONAL SOFTWARE SYSTEMS | SOFTWARE ENGINEER INTERN

Greenbelt, MD | May 2020-Aug 2020

- Developed a project to increase ease of communication between doctors and patients at hospitals by tracking calls, requirements, and patient to doctor communication
- Built a series of **REST APIs** using **Node Js** back-end, **React** front-end, and **MongoDB** database
- Lead weekly **SCRUM** meetings with **offshore teams** in development and integration into production

## PROJECTS

### DIABETIC RETINOPATHY IMAGE CLASSIFICATION

PYTHON, PYSARK, TENSORFLOW, DATABRICKS

Performed a multi-level classification on images of retinas to determine diabetic retinopathy severity. Built using **16gb** of data, **AWS EMR**, and **EC2**, achieving **97% accuracy**

### STUDENT SURVEY TOOL

JAVA, JENKINS, ANGULAR, KUBERNETES, MAVEN, AWS EC2, SPRING

University backed survey application for students. **Angular** front-end with a **Spring** back-end. Deployed onto **EC2** using **Jenkins CI/CD pipeline**. **Dockerized** application and hosted it on a **Kubernetes** cluster for scalability while using **Apache Kafka** to manage micro-services

### TOPIC MODELING COVID-19

PYTHON, LDA, DATABRICKS, PYSARK, AWS EMR&EC2

Implemented topic modeling to find the topic composition and membership of data. Used **Topic modeling** with **LDA** (Latent Dirichlet Allocation) to find 10 topics. Found the 30 most prevalent words in each topic within a collection of **26gb** of research papers. Ran on **AWS EMR** and **EC2**

### NYC TAXI TIME PREDICTION

PYTHON, AWS EC2&EMR, HADOOP, BIG DATA, PYSARK

Modified a Decision tree with linear regressors in the leaves, resulting **75%** better RMSE than the classic Decision Tree and predicted more accurate trip durations. Built using **PySpark** and **Hadoop** Distributed File System and 13gb of data on **AWS EMR** and **EC2**

## SKILLS

**Languages:** Java, Python, C, SQL, Swift, R

**Technology:** Git, AWS, Android, Docker, Apache,  $\LaTeX$ , MongoDB, DynamoDB, FireBase, Kubernetes, Jenkins, Hadoop, DevOps, Unix