# Arun Krishnavajjala

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## EDUCATION

**Ph.D. Computer Science** — Fairfax, VA | Sept 2021 - Present
George Mason University

**M.S. & B.S. Computer Science** (GPA 3.7 & 3.5) — Fairfax, VA | Jan 2021 / Dec 2020
George Mason University

## RESEARCH INTERESTS

Machine Learning, Accessibility, Transfer Learning, ML Efficiency, Computer Vision, Software Development

## WORK EXPERIENCE

**GEORGE MASON UNIVERSITY** | Graduate Research Assistant — Fairfax, VA | May 2021-Present

- Worked under Dr. Kevin Moran with the SAGE Lab and 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 (Preparing for IEEE International Conference on Software Testing '23)

**ALCON** | Research & Design Intern — Fort Worth, TX | May 2021-Aug 2021

- Worked under Ramesh Sarangapani and Sinchan Bhattacharya to design and implement 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**, **PyTorch**, and **Natural Language Processing (NLP)** 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 InternGreenbelt, 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, PySpark, TensorFlow, Databricks
Performed a multi-level classification on images of retinas to determine diabetic retinopathy serevity. 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

**NYC TAXI TIME PREDICTION** — Python, AWS EC2&EMR, Hadoop, Big Data, PySpark
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