

# Arun Krishnavajjala

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## EDUCATION

**Ph.D. Computer Science** (GPA 3.9/4)

**M.S. & B.S. Computer Science** (GPA 3.7/4 & 3.5/4)

George Mason University | Sept 2021 - Dec 2024\*

George Mason University | Jan 2021 / Dec 2020

## PERSONAL STATEMENT

I am a researcher that works in the intersection of software engineering and machine learning to create developer-facing tools to enhance the software development workflow, bridging the gap between innovation and practical implementation.

## PUBLICATIONS

- **A. Krishna Vajjala**, SM H. Mansur, J. Jose, and K. Moran. "MOTOREASE: Automated Detection of Motor Impairment Accessibility Issues in Mobile App UIs". In Proceedings of the 46th ACM *International Conference on Software Engineering* (ICSE 2024), Lisbon, Portugal April 14-20, 2024. (In Review)
- **A. Krishna Vajjala** and K. Moran. "Engineering Accessible Software". In Proceedings of the 39th IEEE *International Conference on Software Maintenance and Evolution* (ICSME'23), Doctoral Symposium, Bogota, Columbia, 2023.
- Aj. Krishna Vajjala, **A. Krishna Vajjala**, Z. Zhou, and D. Rosenblum. "Analyzing the Impact of Domain Similarity: A New Direction for Cross-Domain Recommendation". In Proceedings of the 46th IEEE/ACM *European Conference on Information Retrieval* (ECIR 2024), Glasgow, Scotland March 24-28, 2024. (In Review)

## WORK EXPERIENCE

### GEORGE MASON UNIVERSITY | GRADUATE RESEARCH ASSISTANT

Fairfax, VA | May 2021-Present

- **(Research Project)** Designed and implemented SearchAccess, a developer facing search engine which facilitates search of accessible User Interface Screens using Node.js and Flask back-end and *Python* and React front-end
- Designed a search functionality using CLIP Embeddings and Solr search indexing in conjunction with a MongoDB database and AWS S3 image storage server to perform a search of accessible android UIs.
- **(Research Project)** Designed and implemented MotorEase, an automated tool to detect motor-impairment accessibility issues in mobile applications using Java and Python programming languages
- Integrated state-of-the-art techniques in PyTorch computer vision, pattern-matching, and static analysis to detect various accessibility violations through application screenshots and XML data
- MotorEase Achieved an 87% accuracy when detecting accessibility guidelines at runtime, validating its reliability

### ALCON | RESEARCH & DESIGN INTERN

Fort Worth, TX | May 2021-Aug 2021

- Collaborated with a multi-disciplinary team of researchers and surgeons to prototype a surgical voice assistant
- Lead the design team for a wake-word model for surgical voice assistants, utilizing TensorFlow, AWS SageMaker, AWS S3, and pioneering research in voice assistant technology, given surgery requirements
- Developed a pipeline for audio processing and feature extraction using *Python*, Librosa, and PyAudio, and trained a deep learning model using PyTorch to classify windowed audio and detect the wake-word, "Hey, Alcon"
- Achieved an 80% accuracy rate for wake-word detection in an input stream, exceeding expectations, and deployed the prototype to operating room devices across the United States

### INTERNATIONAL SOFTWARE SYSTEMS | SOFTWARE ENGINEER INTERN

Maryland | May 2020-Aug 2020

- Spearheaded development of a project to improve doctor-patient communication at hospitals
- Built a series of REST APIs using Node Js back-end, React front-end, and MongoDB database
- Lead weekly SCRUM meetings with international teams and delivered timely, high-quality software to production

## PERSONAL PROJECTS

### GITCHAT

CHATGPT-4, PYTHON, CODE ABSTRACTION, LANGCHAIN, DEEPLAKE

GitChat enables developers to link public GitHub projects and interactively query a GPT-based model to comprehend source code. Built with Python, OpenAi API, DeepLake Vector Store, and LangChain to aid in GPT comprehension.

### DIABETIC RETINOPATHY IMAGE CLASSIFICATION

PYTHON, PYSPARK, 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 In detecting diabetic retinopathy severity.

## SKILLS

**Technology:** Java, Python, C, SQL, R, AWS, Android, Docker,  $\LaTeX$ , MongoDB, Kubernetes, Jenkins, Hadoop, Adobe Suite, Unix, Git