Arun Krishnavajjala

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EDUCATION

Ph.D. Computer Science (GPA 3.9/4)   George Mason University | Sept 2021 - Dec 2024*
M.S. & B.S. Computer Science (GPA 3.7/4 & 3.5/4)   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**, 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.
- **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 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, Accepted ICSE 2024
- 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.
- **(Research Project)** Currently implementing a computer-vision based structural embedding for UI Screens.

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