Abdullah Mohammed

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EDUCATION

Master of Science in Computer Science | Stevens Institute of Technology　　　　　　　　**May 2024**
4.0 GPA | Provost's Scholarship Award | Machine Learning Graduate Certificate

Bachelor of Engineering in Information Technology | Osmania University　　　　　　　　**May 2022**

SKILLS

Programming: Java | C++ | Dart | JavaScript | Python (JAX, PyTorch, NumPy, SciPy, TensorFlow, Keras), Bash Scripting
Web/Mobile/Cloud/Misc: Flask | React | Android SDK | Google Cloud (GCP) | Apps Script | HTML | CSS | REST APIs | Node | Express | jQuery | CI/CD | OOP | Distributed Systems | Hadoop | Unit Testing | Microservices | Frontend | Backend | Full-Stack
Database/Version Control/Containerization: SQL (SQLite, PostgreSQL), NoSQL (Firebase, MongoDB), Vector DBs, Git, Docker
Languages: English, Japanese, Arabic, Urdu, Hindi

EXPERIENCE

Research Software Engineer | *Stevens Cognition Lab*　　　　　　　　**Feb. 2024 – Present**
- Collaborating with a cross-functional team to build statistical models for a sociological framework (Cultural Consensus Theory) using NumPyro, leveraging NumPy and JAX for high-performance probabilistic programming.
- Developed and deployed a Google Sheets add-on utilizing JavaScript and REST APIs, enabling real-time data processing to dynamically visualize consensus truths and cultural biases within the spreadsheet data.
- Optimized system performance by offloading inference to Google Cloud Functions, achieving a 78% improvement in latency.

Founding Engineer | *Lexicade*　　　　　　　　**Apr 2022 – Present**
- Led launch of a multi-platform tutoring service empowering over 3000 learners worldwide to achieve their language-learning goals.
- Architected a feature rich cross-platform mobile application, integrating a Large Language Model (LLM) chatbot for immersive guided language practice and Optical Character Recognition for real-time translation using Flutter and Google Cloud.
- Fine-tuning LLM on data scraped from language exchange forums and implementing Retrieval-Augmented Generation (RAG) to improve the chatbot's utility, keeping track of users' progress in a vector database.

Artificial Intelligence Researcher | *Stevens Human-AI Interaction Design Lab*　　　　　　　　**Feb. 2023 – Oct. 2023**
- Developed chatbot interface using Flask, trained a Convolutional Neural Network (CNN) using PyTorch to infer facial expressions and built XGBoost predictive models to study user interactions and trust.
- Leveraged Machine Learning and Statistical Analysis techniques such as Principal Component Analysis, Ordinary Least Squares (OLS), ANOVA, Kruskal-Wallis test etc. to extract insights from high-dimensional heterogenous data.
- Eliminated 30% of research grunt work by implementing automations, including bash scripts and data processing pipelines.

Software Developer Intern | *Tameer*　　　　　　　　**Feb. 2020 – Oct. 2020**
- Designed and implemented a critical beneficiary tracking system for the nonprofit through a mobile app using Flutter and NoSQL database Firebase, streamlining supplies distribution for 32000+ beneficiaries.
- The application eliminated 2+ hours a day of manual work for the recordkeeping team, achieving this enhancement at zero cost.
- Overhauled the system architecture, boosting efficiency by 85% through optimizing database read/writes and strategic caching.

SELECTED PROJECTS

Google Sheets Add-on for Statistical Analysis | *Python, NumPy, SciPy, Flask, JavaScript, Apps Script*　　　　Link
- Add-on for Google Sheets that performs statistical analysis on selected data in the spreadsheet with a single click!
- Used Flask application hosted remotely as backend to perform the calculations, which are fetched seamlessly by a RESTful API.

Brain Tumor Segmentation | *PyTorch, Flask, Computer Vision, Image Segmentation*　　　　Link
- Achieved a Dice score of 0.85 on Brain Tumor segmentation in MRIs by implementing and training a U-Net CNN.
- Integrated the model with a web application UI using Flask.

Transfer Learning in Computer Vision | *Image Classification, TensorFlow, Research*　　　　Link
- Researched and implemented transfer learning for traffic sign classification task through various CNN architectures using TensorFlow and achieved a 97.15% accuracy on the InceptionV3 model.

Semantic Memory Model | *Python, Cognitive Science, Neural Networks*　　　　Link
- Built an Interactive Activation and Competition network to represent semantic knowledge about 15 countries.

Japanese Edge App | *Android, Firebase*　　　　Link
- An Android application for Japanese learners with interactive lessons, vocabulary flashcards and progress tracking.

PUBLICATIONS

Ozolcer, M., Islam, M. R., Mohammed, A., Zhang, T., Bae, S. W., & Liao, T. (2024). Towards Designing Empathetic and Trustworthy AI Chatbots: an Exploratory Study (No. 11648). EasyChair.

Khan, M. K., Abdullah, M., & Suhaib, S. M. (2022). A Transfer Learning Approach to Traffic Sign Recognition.