Mustafa Mannan

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EDUCATION

University of South Florida   Tampa, FL
Bachelor of Science in Computer Science   *Expected Graduation Date: May 2025*

- Relevant Coursework: Data Structures & Algorithms, Discrete Mathematics, Automata Theory, Linear Algebra, Software Engineering, Operating systems, Database Design, Machine Learning

TECHNICAL SKILLS

Languages: Python, C#, C++, JavaScript, SQL
Frameworks/Tools: React.js, Django, PyTorch, Git, Tensorflow
Databases: PostgreSQL, MongoDB, Redis
Cloud & Containerization: AWS, Azure, Docker, Kubernetes
ML Skills: Deep Learning, Neural Architectures, NLP, MLOps, Data Pre-processing, Feature Engineering, Statistical Modeling
Software Skills: Database Design, API Integration and Design, iOS/Android Development, Backend Development

EXPERIENCE

AI/ML Research Assistant   May 2024 – Present
TKAI Research Lab   *Tampa, FL*

- **Expanding advanced neural network models** inspired by Automata theory to improve learning stability and accuracy, addressing longstanding issues of learnability and stability in neural networks
- Achieved a 99.8% accuracy in language prediction tasks through targeted optimization of neural network functions enhancing the model's ability to capture structured relationships in complex datasets
- Enhanced Memory-Augmented RNNs, improving model performance by 10% in both accuracy and stability through targeted optimization of neural network functions
- Built a real-time monitoring and visualization framework for language models, reducing analysis time by 30%, enabling faster iteration cycles and actionable insights into model behavior
- Authoring key contributions to an **upcoming research paper** targeted at a top tier NLP conference, utilizing machine learning and deep learning techniques to advance **neural network stability** and sequence processing

Co-Founder & Lead Developer   December 2023 – Present
Jamaa   *Tampa, FL*

- Led development of a cross-platform mobile app using React Native and Django
- Architected a **distributed backend leveraging Redis and PostgreSQL**, supporting 1,000+ concurrent users with a 50% reduction in server load times.
- **Developed geospatial algorithms** to efficiently display nearby mosques/events, enabling scalable real-time searches with 70% faster response times.
- Deployed a **containerized system on AWS (Elastic Beanstalk, RDS, S3) with Docker**, ensuring 99.9% uptime and seamless scalability.
- **Built 25+ RESTful APIs** and implemented **JWT authentication** with role-based access control
- **Fine-tuned an AI model** to verify mosque credentials and prayer schedules from images, reducing manual review by 60% and boosting system integrity and user trust

PROJECTS   ADDITIONAL PROJECTS: MANNANMUSTAFA.COM

FPL Hero | *React, PyTorch, Azure*   September 2024 – October 2024
- Created a Fantasy Premier League optimization platform powered by a **custom built Large Language Model (LLM)**, achieving 89% accuracy in gameweek point predictions and consistent top 3% global team placements
- Designed and implemented a responsive React frontend seamlessly integrated with an Azure-hosted backend, enabling real-time data processing with sub-200ms latency for enhanced user experience
- Deployed the platform on Azure Functions for serverless scalability, efficiently supporting 500+ daily users with minimal infrastructure overhead

Lugha - Hackathon Project | *Fastapi, PostgreSQL, RDS*   September 2024 – September 2024
- Constructed a language-learning app enabling **AI-driven voice conversations in 5 languages**, reducing AI Conversation latency by 40% and boosting user retention with dynamic proficiency-based pairing algorithms.
- Designed a **ranking and recommendation system** using max-heap, priority queue, and Redis, enabling anonymous voice calls achieving 85% accuracy in matching users of similar proficiency and decreasing wait times by 40%

LEADERSHIP & EXTRA-CURRICULARS

USF NSBE | *Professional Development Chair*   March 2024 – Present
- Organized a hands-on project for USF NSBE members, teaching Git, web development, and deployment, resulting in the organization's website and enhanced skills for 10 participants
- Organized resume workshops, mock interviews, and mock conference with sponsors like Honeywell, GE, Duke Energy, and Citi, preparing 60+ members for careers and connecting 150+ students with industry professionals.