Faiaz Amin Khan

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Research Profile

Senior Software Engineer at Samsung R&D with 3+ years' experience in applied AI for mobile and wearable devices. Holder of A1 and A2 patent-grade research contributions in ai, computer vision and acoustic signal processing. Strong interest in novel sensing, acoustics, personal informatics, multiagent system, ubiquitous computing, HCI, time-series analysis, privacy-preserving intelligent systems, and multimodal learning models.

Education

University of Dhaka January 2018-February 2023
(CGPA : 3.5/4) Bachelor of Science in Computer Science and Engineering *Bangladesh*

Notre Dame College July 2015-July 2017
(GPA : 5/5) High School Diploma *Bangladesh*

Research Experience

Samsung R&D Institute **February 2023-Present**
Senior Software Engineer (Wearable Solution Lab) *Bangladesh*

- Developed an A2 patent-grade acoustic signal–based input control mechanism, designing signal processing and audio augmentation pipelines and building a deep learning architecture to detect ultra-low intensity signal patterns for novel HCI applications.
- Contributed to an A1 patent-grade invention on real-time perspective distortion correction in tilt-shift photography, integrating computer vision techniques with the Scheimpflug principle for smartphone cameras.
- Ideated and prototyped a watchface complication recommendation system for Samsung Galaxy Watches, leveraging machine learning for personalized health insights. It was showcased at Samsung AI POC Exhibition.
- Led the end-to-end implementation of a Watchface recommendation system in the Galaxy Wearable app, deployed globally to millions of users.
- Led the end-to-end implementation of a RAG based cmd line chatbot to help developers with complex queries about UX/UI guide, company policy and current task status which has reduced development time by 10% for my project.
- Contributed to core feature development of the Galaxy Wearable app (100M+ downloads), improving performance and user experience at scale.
- Collaborated on large-scale feature integration for the Galaxy Wearable ecosystem, ensuring reliability and performance across devices.

Scale.AI (Outlier) **May, 2024- November 2024**
Prompt Engineer *Remote(USA)*

- Refined and structured the LLM model for agentic tasks. Created and tested conversational flows aimed specifically for software development.
- Monitored LLM performance and prepared technical evaluation documents.

Cognitive Agents and Interaction Lab **March, 2022- February 2023**
Research Aide *Bangladesh*

- Experimented with reinforcement learning concepts in order to optimise decision-making in multiagent systems.
- Prepared and presented technical presentation, research proposal, and thesis report.

Publications & Patents

Method For AI Based Real Time Perspective Distortion Correction In Tilt Photography
Samsung A1 patent grade. Pending patent filing.

- **Key points:**
  * Actively collaborated on the development of a novel mechanism to correct perspective distortion in tilt-shift photography using Samsung phone.

    * The approach integrates computer vision techniques with the Scheimpflug principle for enhanced image rectification.

Method For Acoustic Signal Based Input Mechanism For Headless Devices

Samsung A2 patent grade. Pending patent filing.

- **Key points:**
    * Led the development of a novel input sensing mechanism for headless device.
    * Analyzed acoustic signal and performed sound source isolation technique capture the target signal.
    * Developed a deep learning based architecture to differentiate between ultra low intensity signal patterns.

Deep Learning Approach to Solving the Travelling Salesman Problem with Hardness-Adaptive Curriculum

Undergraduate Final Poster Presentation, University of Dhaka

- **Key points:**
    * Developed a deep learning-based approximate solution for the Traveling Salesman Problem (TSP).
    * Integrated the TSP 1.5-approximation algorithm into a surrogate model.
    * Improved benchmark model using the REINFORCE algorithm, outperforming the greedy roll-out method.

TECHNICAL SKILLS

- Languages: Kotlin, Python, Java, JavaScript, C/C++, R
- Frameworks & Tools: Work Manager, AIDL, Coroutine, MVVM, MockK, FastAPI, NodeJS, NestJS, Django, Flask, Material UI, ReactJS, Git, GCP
- Database: MongoDB, PostgreSQL, MySQL, SQLite, Firebase
- Platforms: Android, Arduino, Web
- ML Toolkits: PyTorch, LangChain, TensorFlow, NumPy, Pandas, Scikit-Learn, Matplotlib, Jupyter Notebook

Personal Projects & Workshops

- **Meal Planner AI-**
    - A web application built with Next.js and TypeScript that generates personalized meal plans based on user goals and profiles.
    - Implemented AI functionality using LangFlow and DeepSeek API, with AstraDB for database storage.
- **ClassBot-**
    - A command-line chatbot designed to assist students by providing quick and accurate responses to common queries such as class schedules, faculty details, and general inquiries.
    - developed a custom dataset, preprocessed the data and trained the model using python, nltk and tensorflow
- **Donate+-**
    - An Android application that aims to connect blood donors to the patients who need blood for medical purpose.
    - Implemented core functionalities in Java, used Google Firebase for database and used Google Map Api for location services.
- **MNISTNET-**
    - Developed a compact deep-learning workflow, using Python and PyTorch, designed to classify handwritten digits with the MNIST dataset.
    - It defines a simple network (MNISTNet) and a training pipeline (train() helper) so users can quickly train and test a model

Awards & Achievements

- Samsung SWC Level: Professional (Samsung's internal coding capability certification)
- Samsung Excellency Award for the contribution in Galaxy Wearable App development
- Samsung Excellency Award for the contribution in the R&D of watchface complication recommendation system
- Samsung Mobile R&D CTO Award for my performance in research & development
- National Scholarship from Bangladesh Government for outstanding results (ranked among the top 0.04%) in Secondary School Certificate Exam
- Ranked among the top 0.05% in University of Dhaka Entrance Examination. (Held Nation wide)

Test Scores

- IELTS: 8
- GRE: 318 (V: 153 & Q: 165)