Muhammad Haider Khan

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Education

COMSATS University Islamabad — Islamabad, Pakistan
Bachelor of Science in Computer Science — Feb 2019 – Feb 2023
Project: LucaSeg – Mobile and web-based application for lung cancer detection using deep learning (CNN) models on CT-scan datasets with real-time segmentation and classification.

Experience

wAI Industries — Islamabad, Pakistan
Lead Mobile Applications — Dec 2024 – *present*
Leading the mobile engineering team, developing enterprise-grade field service solutions integrated with Edge AI and offline-first capabilities.

- **Architected the codebase using MVVM Clean Architecture and Hilt Dependency Injection**, creating a modular foundation that reduced feature development cycles by **30%** for the engineering team.
- **Built an enterprise-grade Field Service application** for a reputed electric utility organization, facilitating accurate meter readings for **2000+** field workers.
- **Deployed custom TFLite Object Detection and OCR models** to automatically capture and digitize electric meter readings, reducing human data entry errors by **90%**.
- **Designed an "Offline-First" synchronization system** using Room Database and WorkManager, ensuring **100%** data integrity when field agents operate in remote areas with intermittent connectivity.
- **Optimized TFLite model size and inference speed,** allowing complex neural networks to run efficiently on entry-level enterprise devices without compromising battery life.
- **Enhanced security compliance** by implementing Device Binding and following **OWASP Mobile Top 10 guidelines**, securing sensitive grid data against unauthorized access.
- **Configured ProGuard/R8** rules to obfuscate code and shrink APK size by **35%**, ensuring intellectual property protection and faster download speeds.

ISSM — Islamabad, Pakistan
Android Software Developer (Promoted from Intern) — Mar 2022 – Nov 2024
Progressed from Intern to Full-time Developer, leading the R&D and implementation of biometric and voice-AI features for fintech clients.

- **Refactored legacy modules into MVVM architecture**, decoupling UI from business logic to enable **test-driven development (TDD)** for critical banking transactions.
- **Engineered a high-precision contactless biometric authentication system** for enterprise banking, enabling secure finger verification via smartphone cameras with **99%** acceptance accuracy.
- **Designed a custom Computer Vision pipeline using CameraX**, implementing real-time frame preprocessing to feed data into custom TFLite models under **200ms** latency.
- **Architected a "Siri-like" conversational banking interface** that condenses complex transaction flows into 2-step voice commands, improving user task completion **speed by 60%**.
- **Developed a real-time full-duplex audio streaming module** using **WebSockets**, utilizing **Mu-law** compression to reduce bandwidth usage by **50%**.
- **Integrated Voice Activity Detection (VAD)** algorithms directly on-device to detect end-of-speech and handle user interruptions with **<100ms latency**.
- **Reduced battery drain by approx. 40%** during continuous inference sessions by optimizing the TFLite interpreter lifecycle and managing thread allocation dynamically.

Skills & Technologies

Programming Languages: Kotlin, Java, Swift, Python, SQL
Android Frameworks & Architecture: Jetpack Compose, MVVM, Clean Architecture, Coroutines, Flow, Hilt/Dagger, Retrofit, Room Database, WorkManager
Mobile AI & Computer Vision: TensorFlow Lite (TFLite), CameraX, ML Kit, Edge AI Optimization, Voice Activity Detection (VAD), Mu-law Compression, Signal Processing, OCR
Backend & Integrations: WebSockets (Socket.IO), RESTful APIs, Firebase, Google Maps API, Docker, FastAPI
DevOps & Security: CI/CD Pipelines (GitHub Actions), Git, ProGuard/R8, OWASP Mobile Security, Gradle Optimization