Moksh Desai

Valsad, GJ, India

Native macOS & Kotlin Multiplatform Engineer · Real-Time Audio

Ships native macOS utilities and real-time audio systems in Swift and C++, and Android, iOS, desktop and web apps from a single Kotlin Multiplatform codebase.

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SELECTED PROJECTS

Anchor — Head-Tracked Spatial Audio /xm5-head-tracking-macos
Swift · Core Audio · IOKit HID · SwiftUI · BlackHole · SADIE II HRTF · AGPL-3.0

- Reverse-engineered the Sony WF-1000XM5's undocumented head-tracking HID interface, which macOS never exposes, to stream live orientation over Bluetooth at a sustained 25 Hz.
- Built a real-time binaural renderer that convolves system audio through measured SADIE II HRTFs and counter-rotates the soundstage, anchoring audio to the machine rather than the head.
- SwiftUI menu-bar app that claims and safely restores system output, even after a force-quit, with calibration, live yaw/pitch/roll telemetry and a global recentre shortcut. Verified on hardware.

Lockside — Lock-Screen Widgets for macOS lockside.moksh.dev
Swift · SwiftUI · AppKit · macOS 26 · XcodeGen · GPL-3.0

- Built 13 lock-screen widgets (Now Playing with seek scrubber, synced Lyrics, Weather, Stocks, Calendar, System Monitor, News) that appear on lock and vanish on unlock, in Clear, Frosted or Dark looks.
- Designed Layout Studio: drag widgets over your real wallpaper with edge, centre-line and grid snapping, five preset sizes plus freeform. Shipped a waitlist site with Free and Pro tiers; no analytics in the app.

SplitStream — F1 Companion App Live on Google Play · splitstream.moksh.dev
Kotlin Multiplatform · Jetpack Compose · SwiftUI · Ktor · SQLDelight · Glance · WidgetKit

- KMP shared core (domain logic, SQLDelight persistence, Ktor clients for Jolpica/Ergast-compatible APIs) driving an Android Compose app and a native SwiftUI iOS host.
- Seven Android home-screen widgets (Countdown, Standings, Trivia, Driver Stats, Lap Record) on Glance and RemoteViews with WorkManager sync, plus WidgetKit equivalents on iOS; GitHub Actions pipeline for signed APK/AAB releases.

FxSound — macOS Port /fxsound-macos
C++ · JUCE 7 · CMake · Core Audio · Universal Binary (arm64 + x86_64) · AGPL-3.0

- Ported FxSound's real-time DSP enhancer to macOS via BlackHole 2ch, preserving all five effects, the 10-band EQ and presets; one-command clone-and-build universal binary for macOS 13+.
- Architected a lock-free MacAudioEngine on JUCE AudioDeviceManager, decoupling UI state through FxController from the audio thread: zero locks or allocations in the processBlock path.

Autocrate — Harmonic Setlist Curator for Apple Music /autocrate
Swift · SwiftPM · ScriptingBridge · GRDB · On-device DSP · SwiftUI

- Menu-bar app that reads the now-playing track and ranks harmonically and tempo-compatible next plays (Camelot wheel, half/double-time BPM bands). Key and BPM from on-device DSP of preview clips with API backfill: 96.4% key coverage over a 2,011-track library; 116 unit tests on the headless core.

Sonic Signature — LLM IEM Recommender /sonic-signature
KMP · Compose Multiplatform (Android, iOS, Desktop, Wasm) · Last.fm · OpenRouter · Ktor

- Serverless four-target KMP app building per-session taste profiles from Last.fm tags and returning budget-tiered recommendations as structured JSON; keys in Keystore, Keychain and AES-GCM vaults per platform.

ACHIEVEMENT

Winner — AISE Hackathon
DAU (formerly DA-IICT)

Meeting Monitor AI — invisible AI sales assistant; a screenshare-proof desktop overlay over five microservices for live transcription, emotion detection, LLM coaching and CRM sync.

PyQt6 · Windows APIs · WhisperX · DeepFace · FastAPI · Gemini + Ollama

PROGRAMMING LANGUAGES

Swift · Kotlin · Python · C++ · JavaScript / TypeScript · SQL

FRAMEWORKS & TOOLS

APPLE PLATFORMS
SwiftUI · AppKit · SwiftPM · ScriptingBridge · XcodeGen · GRDB

MULTIPLATFORM
KMP · Compose Multiplatform · Jetpack Compose · Glance · WidgetKit · SQLDelight · Koin

AUDIO & SYSTEMS
Core Audio · JUCE · IOKit HID · Bluetooth HID · Real-time DSP · HRTF convolution

BACKEND, DEVOPS & INFRA
Ktor · FastAPI · REST · WebSockets · Docker · Nginx · Ansible · GCP · AWS · Shell · Git · GitHub Actions · Hypervisors

AI & ML
Agentic harnesses & workflows · prompt engineering · n8n · Ollama · LM Studio · model fine-tuning · image segmentation (YOLO)

EDUCATION

B.Sc. Computer Science

Veer Narmad South Gujarat University, Surat · 2024 – 2027 (expected)