

Shanmukha Sai Pitani

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Summary

Computer Science undergraduate with a systems-oriented approach to applied intelligence across mobile, backend, and web platforms. Experienced in building software using system-level APIs, computer vision, and backend infrastructure.

Research Interests

Applied Machine Learning Systems, Computer Vision Pipelines, Backend Systems, Mobile Systems, Real-Time Communication

Technical Skills

Mobile & Systems: Android (MediaProjection, Accessibility Services, Overlays, JNI), Java, C, Python, C++

Applied Intelligence: ML Kit, OCR (PaddleOCR), LLM integration, on-device processing

Backend & Infrastructure: Go, Node.js (Express), Python (Flask), PostgreSQL, Firebase (Auth, Firestore, Real-time DB), Supabase, MinIO, Cloudflare Tunnels

Web Client Technologies: NextJS, ReactJS, Static HTML, CSS, JavaScript, Tailwind CSS, Bootstrap

Publications

Pitani, Shanmukha Sai. *From Static Firebase-Based Site to Dynamic Next.js SSR Platform: Evolution of AureliaHealth*. Manuscript under review at **IEEE Software**, 2026.

Experience

Lemly Inc. (United Kingdom)

May 2025 – Present

Software Engineer (Android & Backend)

- Developed Android features using system-level APIs including Accessibility Services, overlays, and MediaProjection.
- Built backend services in Go, implementing REST APIs, JWT-based authentication, and database integrations.
- Worked with production data stores including PostgreSQL and Firebase (Auth, Firestore, Realtime Database).

Additional: Google Play Developer Profile - [Play Store](#)

Selected Projects

Real-Time Screen Intelligence System (Android)

Independent Project

- Designed and implemented a real-time Android screen understanding system using MediaProjection and MLKit.
- Integrated on-device ML (ML Kit), external OCR pipelines, and LLM-based reasoning for visual interpretation.
- Evaluated privacy, performance, and UX tradeoffs inherent to system-level Android permissions.

Vision-Based Document Understanding System

Independent Project

- Built a vision-based pipeline to extract structured data from receipt images and convert it into HTML table.
- Leveraged a pretrained vision model (Maverick) alongside OCR to detect text regions and infer document layout.
- Implemented post-processing logic to normalize extracted content into structured, machine-readable representations.

Android + Go Full-Stack System

Independent Project

- Built a software with an Android client and Go backend using Fiber for APIs and JWT-based authentication.
- Integrated PostgreSQL for persistent storage and designed secure authentication and authorization flows.
- Currently extending the system with real-time communication using WebSockets.

ConferIt - Self-Hosted Video Conferencing System

Independent Project

- Developed a self-hosted video conferencing platform using WebRTC exploring real-time communication and backend scalability.
- Analyzed deployment, networking, and cost-performance tradeoffs compared to commercial platforms.

Aurelia Health Platform

Independent, Full-Stack Developer

- Solely designed, developed, and deployed the complete software platform for Aurelia Health.
- Built using NextJS and production system live at aureliahealth.org.

Education

B.M.S. College of Engineering, Bangalore
Bachelor of Engineering – Computer Science and Engineering

Expected Graduation: 2029

Additional Coursework: Harvard CS50x – Introduction to Computer Science