Manish Biswal

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EXPERIENCE

- **Google Summer of Code '25** — Contributor

  The Palisadoes Foundation — *Summer 2025*

  - **Project: Enhanced Notification & Chat System**: Designed an event-driven, template-based notification engine and per-user audience, deterministic audience resolution, and idempotent in-app delivery via composite keys.
  - **Implemented a resilient email channel using AWS SES v3**: transactional outbox + background queue with retry/backoff and rate-aware bulk send; wired dual-channel fan-out from domain events

- **Palisadoes Foundation (Open Source)** — Remote

  Open Source Contributor — *Feb 2025 – Present*

  - **GraphQL API Enhancements**: Authored and merged over **25+ PRs** to project `talawa`. Implemented complex queries, mutations and test suites .
  - **Secure File Storage Migration**: Led migration to `MinIO` object storage, implementing a **presigned URL architecture** for secure file uploads/retrievals and a deduplication system which enhanced the api performance by 30% . Resolved critical **XSS** and **CORS** vulnerabilities to improve platform security.
  - **Frontend Development Documentation**: Built React components for the `talawa-admin` dashboard to support MinIO integration. Enhanced UI and authored comprehensive **developer onboarding documentation**.

PROJECTS

- **KeyNest**

  C, HTTP REST, libmicrohttpd, POSIX pthreads, uthash

  - Designed and implemented a high-performance, log-structured key-value database engine in C .
  - Achieved **O(1)** key lookups using hash table indexing and optimized performance via memory-mapped file I/O and automatic data file consolidation.
  - Implemented a multi-threaded architecture with thread-safe concurrent access, background compaction processes.

- **Skii Chat: Secure P2P Video Communication Platform**

  WebRTC, STUN/TURN, Socket.IO, React

  - Developed a secure, fully-functional peer-to-peer video conferencing application leveraging WebRTC for real-time video/audio communication.
  - Implemented a progressive connection strategy with STUN/TURN fallback, achieving a 99.8% connection success rate across diverse network configurations, alongside advanced error recovery.

- **Skii Discord Bot**: Built a Retrieval-Augmented Generation (RAG) Discord bot with vector similarity search (Qdrant, 768-dim embeddings) and Redis-backed session memory, orchestrating multi-model conversations via OpenRouter/Gemini; containerized services with Docker and optimized context routing.

TECHNICAL SKILLS

- **Languages**:C,Go,Rust,JavaScript,TypeScript,C++,Python .
- **Frameworks & Tools**:Node.js, React.js, Next.js, Fastify, NestJS, Websockets, GraphQL, gRPC, tRPC, BullMQ, RabbitMQ, Apache Kafka, Docker, Grafana, Prometheus, K6, Kubernetes, GitHub Actions, Jenkins, AWS, Nginx, GitLab, WebRTC, Jest, Vitest, Cypress, Puppeteer .
- **Databases**: MongoDB, PostgreSQL, Redis
- **Other**: System Design, Microservices, DevOps, Full-stack Development

ADDITIONAL

- **Active Open-Source Contributor**: Contributed to various open-source projects, with **30+ merged Pull Requests**.
- **Lead, Programming Society**: Elected as Lead of the Programming Society at IIIT Bhubaneswar (2025–26).

EDUCATION

- **International Institute of Information Technology, Bhubaneswar** — CGPA 7.82/10

  B.Tech in Computer Engineering — *2023 – 2027*