

# DARSH MAHADEVIA

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## EDUCATION

### University of Pittsburgh

B.S. in Computer Science | GPA: 3.71/4.00

Pittsburgh, PA

Expected May 2028

**Coursework:** Algorithms & Data Structures II, Operating Systems, Database Systems, Discrete Structures, Linear Algebra

**In Progress:** Computer Organization, Systems Software, Formal Methods

**Adani University** Computer Science coursework before transferring to Pitt

Ahmedabad, India | 2023 – 2025

## TECHNICAL SKILLS

**Languages:** Go, Rust, TypeScript, Python, JavaScript, SQL

**Core CS:** Distributed Systems (Raft, Replication, Linearizability), Concurrency, Fault Tolerance, CRDTs & Real-Time Sync, System Design, Operating Systems, DBMS, Data Structures & Algorithms, OOP

**Frameworks & Tools:** gRPC, Protocol Buffers, React, Node.js, Express, Socket.IO, Yjs, PostgreSQL, Drizzle ORM, Docker Compose, Prometheus, GitHub Actions, Vercel, Git

**AI Engineering:** LLM integration (OpenRouter, Google Gen AI SDK), streaming, Zod validation, on-device inference

**AI Dev Tools:** Claude Code, OpenAI Codex, Cursor, pstack, mattpocock/skills

## PROJECTS

**Ternion** Go, gRPC, Protocol Buffers, Raft, Prometheus

github.com/darshmahadevia/ternion

- Built a **three-node key-value store** that keeps serving when one node fails while the other two stay connected, using Raft replication, durable quorum writes, and linearizable reads
- Measured median throughput of **145.1 durable SETs/sec and 2,936.7 linearizable GETs/sec** in five short local benchmarks with eight clients, 1 KiB values, and fsync-backed replication
- Preserved **at-most-once mutation effects** across retries and failover with replicated client sessions and sequence numbers, backed by checksummed WAL recovery and atomically installed snapshots
- Kept the **Raft core deterministic** by moving networking, disk, and timers into the runtime, enabling replayable seeded fault schedules, linearizability checks, and multi-process partition tests

**TypeSync** React, Yjs, Socket.IO, PostgreSQL

github.com/darshmahadevia/TypeSync | typesync.darshmahadevia.tech

- Built a collaborative rich-text editor syncing TipTap and **Yjs CRDTs over Socket.IO**, with live cursors, presence, sharing roles, and PostgreSQL persistence through Drizzle
- Kept reconnecting documents marked **unsynced until PostgreSQL confirmed persistence** by tracking update acknowledgements, retrying pending edits, and reconciling server revisions
- Blocked **stale AI suggestions** streamed via OpenRouter from overwriting changed passages by anchoring selections with Yjs relative positions and validating text before acceptance

**Voco** Rust, GPUI, Metal, ONNX Runtime, whisper.cpp

github.com/darshmahadevia/Voco

- Built an **on-device dictation app** for Apple Silicon Macs as one Rust executable, replacing an Electron UI and Swift helper
- Transcribed 17.369 seconds of synthetic speech in a **median 2.818 s with Whisper and 1.384 s with Parakeet** across five local trials per engine, including model verification and loading
- Added **on-device LLM formatting** (Apple FoundationModels) that reverts to rules on timeout or altered protected text

## EXPERIENCE

### Student Technical Consultant

Oct 2026 – Present

Pitt Digital, University of Pittsburgh

Pittsburgh, PA

- Diagnose and fix **software, OS, and network** problems for students, faculty, and staff, including malware removal
- Open, update, and close support tickets in **TeamDynamix**, recording the fix for each issue

## LEADERSHIP & ACTIVITIES

**Vibe Check** Winner, Best Use of Gemma 4, MLH Hacktoberfest Hack Day Pittsburgh

Oct 2026

github.com/darshmahadevia/vibe-check | vibe-check-three-nu.vercel.app

- **Led implementation** of a Next.js app that suggests eight songs for a photo, explaining each match by lighting and scene
- Validated **Gemma output with Zod**, capped retries at one within a 100-second deadline, and kept ranking deterministic