

HARSHA VARDHAN RAPETI

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TECHNICAL SKILLS

Languages C++, TypeScript, Python, Rust, Bash, MySQL, Ruby, Faust

Technologies Django, MongoDB, Next.js, FastAPI, Ruby on Rails, JUCE, LangChain, React, TensorFlow

Developer Tools Git, CMake, Make, Visual Studio, GDB, Docker, Valgrind, Perf, Postman

PROFESSIONAL EXPERIENCE

Junior C++ Developer

Aug 2024 – May 2025

Pitch Innovations

- Developed **VST and standalone audio plugins** for Windows and macOS using **C++ and JUCE framework**, deployed to **1,000+ active users**.
- Architected **cross-platform build systems** using CMake, reducing **compilation time by 40%** and enabling concurrent Windows/Mac/Linux builds.
- Integrated **Faust DSP language** into build pipeline, accelerating audio effect **development cycle by 60%** through automated code generation.
- Implemented **8+ professional-grade audio effects** including delays, compressors, distortions, Schroeder reverb, granular synthesis, and convolution reverb with **optimized real-time performance**.

PROJECTS

FishScales - [link](#)

Interactive Musical Scale Viewer for guitar and piano

- Built an interactive frontend using **React and Tailwindcss** that **generates svg's** for note and chord diagrams for piano and guitar
- Implemented **indexing and searching** on similar chord patterns using mongo atlas's **vector search** for searches **under 10ms**, called from **Django** backend
- Utilised Next.js hosted on Vercel as the **middleware** for security
- Technologies: MongoDB, Django, React, Vercel, Render, mongo-atlas, Next.js, Tailwindcss, Git

tusk.ai - Intelligent Web Page Data Extraction [repo](#)

Browser extension leveraging RAG pipeline for context-aware web page data extraction

- Built **agentic RAG pipeline** with context-aware query processing
- Integrated **local Ollama LLM support**, enabling offline operation and **reducing API costs by 100%** for privacy-conscious users
- Developed responsive **React/TypeScript UI** with Vite build system, achieving **sub-200ms interaction latency**
- Technologies: TypeScript, React, Vite, LangChain, Ollama, Firefox Extension API

Warmer - Node-Based Audio Synthesizer [repo](#)

Open-source audio synthesis platform with 25+ unique nodes and real-time graph processing

- Engineered **lock-free multi-threaded audio processing engine** using topological sorting algorithms, supporting **graphs with 50+ nodes** at 48kHz sample rate
- Implemented **15+ DSP algorithms** including FFT-based spectral processing, IIR/FIR digital filters, and non-linear waveshapers.
- Designed efficient **XML-based serialization system** for graph state persistence.
- Technologies: C++17, CMake, Make, Mingw-w64, JUCE, GDB, Valgrind, Git

EDUCATION

BIT Mesra (Birla Institute of Technology)

Oct 2022 – Present

Bachelor of Technology in Artificial Intelligence and Machine Learning

CGPA: 7.58/10.0

PRESENTATIONS AND TALKS

ADC India 2025: Spatial Audio Localization Techniques

Conference Presentation

Presented at Audio Developer Conference (ADCx) India Watch

- Presented to audience of **100+ audio developers, engineers, and industry professionals**