

HARSHA VARDHAN RAPETI

+91 7842751810 rharshavardhan2004@gmail.com LinkedIn Github

TECHNOLOGIES AND LANGUAGES

Languages C++, Python, Rust, Faust, Bash, Javascript
Frameworks JUCE, TensorFlow, matplotlib, numpy, pandas

Tools Git, CMake(Make, VS), GDB, Valgrind

EXPERIENCE

Junior C++ Developer Pitch Innovations

Aug 2024 - May 2025

- Worked on developing VST and Standalone Audio Plugins for Windows and Mac.
- Built robust build systems using cmake for cross-platform compilation, Integrated Faust with build system to streamline DSP effect development-feedback cycle.
- Developed multiple audio effects such as delays, compressors, distortions, reverb (Schroeder), granular effects, and convolution reverb using Faust and C++.
- Technologies : c++, CMake, Visual Studio, faust, git, github.

PROJECTS

Analytiks [repo](#)

May 2025 – Jun 2025

A FOSS Vision4x clone, written in C++ using JUCE Framework.

- Implemented 4 professional audio visualizers with OpenGL backend – Correlation Meter, Spectrogram, Oscilloscope, and Spectrum Analyzer.
- Optimized the inter-thread communication by using a block-free queue.
- Built and Distributed through Github CI/CD and Github releases.
- Technologies : C++, CMake(VS22), JUCE, Git, Github.

SynthBite16 [repo](#)

Nov 2023 – Jan 2024

A 16-bit computer Designed and implemented in Logisim.

- A reprogrammable computer with 38 Instructions, 2 Addressing Modes, and Register Stack which can be Simulated.
- Created an efficient instruction format for the counter, optimizing the use of 16-bit word divided into 4 nibbles.
- Designed an exclusive assembly language for the computer and developed an assembler for it.
- Technologies : Logisim, Git, C++

JuliaPlot [repo](#)

Jan 2024

A WebGL based Fractal Plotter.

- Implemented a WGSL shader that renders the Julia set in the browser.
- Implemented features such as zooming, panning, and dynamic color schemes to enhance user interaction.
- Technologies : Javascript, WebGL, WGSL, Git, Github.

Warmer [repo](#)

Feb 2024 – Jun 2024

Open-source Node Based Audio Soft Synthesizer Builder with over 25 Unique Nodes, written in C++ using JUCE Framework.

- Implemented Dynamic Topo Sorters and Graph Solvers that can Process Real time Audio in a lock-free multi-threaded environment.
- Implemented over 15 Different kinds of FFT and Non-FFT based DSP Algorithms including digital filters.
- Implemented Efficient serialization and deserialization using XML files to save and load graph state.
- Made use of advanced C++ features (templating, STL, multithreading, callbacks, and polymorphism) to optimize performance and enhance scalability and readability.
- Technologies : C++, CMake(Make, Mingw-w64), JUCE, GDB, valgrind, Git

EDUCATION

BIT Mesra

Oct 2022 – Present

Bachelor of Technology in Artificial Intelligence and Machine Learning
Cgpa : 7.51

PRESENTATIONS

ADCx:India Spatial Localization and Techniques for Synthesizing Real-Time Binaural Audio for Headphones [Watch](#)
Implementing Spatial Audio and Room Simulation in C++