

Pratham Vadhulas

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EDUCATION

Georgia Institute of Technology

Atlanta, GA | May 2026

Master of Science, Computer Software and Media Applications (Music Technology) | GPA: 4.0

Relevant Coursework: Music and Game Design, Network Music Systems, Research Methodologies

Purdue University

Indianapolis, IN | May 2024

Bachelor of Science, Computer Science

Relevant Coursework: AI Music Systems, Deep Learning, Computer Vision, Cyber Security, Data Structures, Linear Algebra, Computer Architecture

SKILLS

Audio and Signal Processing: Digital Signal Processing (DSP), Max/MSP, JUCE, music21, Plugin Development

Technical Skills: 3D Modeling, Model interpretation, C++, Computer Vision (CV), Python, MATLAB, PyTorch, JavaScript, Java, SQL, Vue.js, Three.js React, Git, Linux

Software Development: Full-Stack Development, REST APIs, Unit Testing, Machine Learning,

Embedded Systems and IoT: Arduino, Raspberry Pi, Wi-Fi, Sensor Integration

Soft Skills: Technical Writing, Presentation, Public Speaking, Team Management, Mentoring, Critical Thinking, Analytical Skills

EXPERIENCE

Lead Researcher, Center for Research and Learning(CRL)

Indianapolis, IN | May - Aug 2023

- Developed a neural network based on the Transformer Architecture for chord prediction using MIDI data, performed Model Optimization, achieving sub -1.3 loss.
- Scraped 15,654 songs with Python, stored data in *5NF*, and preprocessed for feature extraction
- Generated chord progressions with 60% more diverse velocity, enhancing human-like sound
- Presented research at CRL Symposium 2023, Indianapolis, contributing to Music Information Retrieval
- Demonstrated strong leadership and communication skills by collaborating with a professor and aligning with the funding body
- Worked under Dr.Jason Palamara, Professor of Music Technology at Indiana University

PROJECTS

[MIDI Gen AI](#) | Python/Pytorch/Transformer

Developed a chord prediction tool using a Transformer model trained on 20.9 million MIDI tokens.

[Audio Sentiment Analysis](#) | Python/PyTorch/CNN

A CNN audio sentiment analysis model for movie soundtracks. Producing an accuracy of 92%.

[DSP Fundamentals](#) | Python/numpy

The project simplifies DSP learning by enabling direct practical engagement without complex setup requirements.

[Convolution Reverb Plugin](#) | C/C++/JUCE/DSP

A convolution reverb plugin with JUCE, optimizing for realistic sound and low-latency performance.

[Arduino Home Security System](#) | C/C++

Developed a home security system using an Arduino and ESP32 Wi-Fi chip for real-time data streaming from sensors and actuators

[Vision Synth: Hand Gesture Music Interface](#) | Python/YOLO

Developed an experimental program that converts hand movements into music using a vision-based neural network with a YOLO hand detection model for real-time hand tracking via a webcam.

[Computer Vision Algorithms](#) | C++

Implemented fundamental computer vision algorithms, including Sobel operators, convolution, and edge detection