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)

Relevant Coursework: Music AI Research, Digital Signal Processing (DSP), Music Perception and Cognition, 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, UNIX, macOS, NodeJS, MySQL

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

Music Informatics Lab, Georgia Tech Atlanta, GA | Jan 2025 – Present

- Contributing to AI-driven research on music analysis and generation within the areas of Music Information Retrieval
- Exploring machine learning models for extracting and interpreting musical features from audio recordings.

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
- Generated chord progressions with 60% more diverse velocity, enhancing human-like sound
- Presented research at CRL Symposium 2023, Indianapolis, contributing to Music Information Retrieval
- 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.

SPRAWL: Communication and Sound-Reactive Light Node | SuperCollider/C/C++/Shell

Contributed to a research project in the L42i (Immersion) Lab at Georgia Tech. Collaborated with the team to enhance project communication and developed a sound-reactive light node.

DSP Fundamentals | Python/numpy

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

DAW-OS Kernel | Assembly/C

Designing a custom operating system optimized for Digital Audio Workstations (DAWs), focused on providing a robust and high-performance environment for seamless audio production.

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