Rahul Peter

RP335 | rahul | email@rahul.peter.com | Site | +91.8431940842

SUMMARY

Graduated in 2023 majoring in Electronics and Communications engineering and working as a software engineer. Interested in research (preferably in signal processing/MIR). Have a strong background in software engineering, signal processing and music production/composition.

WORK EXPERIENCE

Software Engineer July 2023 - Present

– Backend Developer in the Online Payments Plural Team at PineLabs, collaborating with industry-leading merchants such as Flipkart, Amazon, and brands like Apple to build and integrate affordability and EMI features into the online payments platform, streamlining business processes.

– Proficient in developing services using Kotlin with the Ktor framework for scalable, high-performance backend solutions.

– Developed all CI/CD pipelines for seamless application deployment on cloud platforms.

– Proficient in Python for functional testing and automation to ensure code quality and reliability.

– Used Terraform to build and deploy cloud infrastructure from scratch.

Designation July 2022 - Dec 2022

– Front-End Developer Intern at Happay

– Wrote code which includes -

– Revamping the travel platform UI by resolving existing bugs, optimizing existing features and developing new ones.

– Developing dynamic email templates for updating booking states to the customer, thus reducing LOC redundancy by 80 percent.

Designation June 2021 - Jan 2023

– Freelance Musician. Session piano player and composer.

– Transcribing. Proficient in jazz and have all my major sheet work here.

– Producing and mixing/mastering music on a commercial level.

– Contributing to open-source music tools.

PROJECTS

Jazz Piano MIDI Generation using MidiTok and Hugging Face Transformers

Developed a project to tokenize MIDI files and train a Large Language Model (LLM) using MidiTok. Utilizing MidiTok, I trained a Hugging Face Mistral model on over 4 hours of my piano playing, fine-tuning the tokenizer to generate realistic jazz piano sequences. Integrated GPT-2's tokenizer to convert text prompts into MIDI generation requests for fixed length sequences such as 8 bars.[Code]

V/NV Detection in Speech using Variational Mode Decomposition

Developed a research-oriented project during college under Prof. **Anurag Nishad** focusing on voiced/non-voiced (V/NV) detection in speech signals. Implemented variational mode decomposition (VMD) iteratively to extract the fundamental frequency component, and used its envelope for V/NV detection. Evaluated its performance against empirical mode decomposition (EMD) and wavelet transform methods using datasets from the CMU Arctic and NOISEX-92 databases under various noise conditions. [Details]

Microtonal Audio Classification Using Machine Learning

An experiment exploring the classification of microtonal audio data using various machine learning and deep learning techniques. Leveraged `xenharmlib` to generate a diverse dataset of microtonal chords and melodies in various EDO (Equal Division of the Octave) tunings. Implemented multiple models including Convolutional Neural Networks (CNNs) combined with Time-Distributed Networks (TDNs) and Long Short-Term Memory (LSTM) networks. Benchmarked against traditional machine learning methods (for chords classification only) such as Random Forest Classifiers, both with and without hyperparameter tuning. [Code]

Negative Harmony Generator Plugin: Crafted a plugin for generating negative harmony in MuseScore, offering users a tool to explore harmonic transformations. Leveraged QML for seamless integration with MuseScore's interface. [Github].

Microtonal Tuning Plugin: Developed a plugin enabling microtonal tuning of notes in MuseScore, utilizing just intonated ratios for precise pitch adjustments. Facilitated direct insertion of microtonal intervals into musical compositions. [Github].

PUBLICATIONS

Sept 2024 **Adversarial Masking Approach for Robust Target Source Localization in the SH Domain**

Dr. Aurobinda Routray, *Rahul Peter*, Priya D. Dr. Rajesh Hegde

Track Name: ICASSP 2025 Main Tracks
2025 IEEE International Conference on Acoustics, Speech and Signal Processing
Submission: (6047)

EDUCATION

2019 - 2023   B.E (ECE) at **Bits Pilani, K.K. Birla Goa Campus**   (Grade: 8.14)

SKILLS

Music Related	Composing, mixing, mastering, transcribing, piano
Tech Related	Programming, Signal Processing, MATLAB, Python