Android Application Development for Algorithmic Music Generation through Artificial Neural Networking

Gopalakrishnan, Sriram

Neural networking is a new and exciting form of machine learning that utilizes computer science, software development, and mathematics to create a network of virtual neurons that process inputs and deliver outputs. Together, these neurons combine their outputs and feed into other neurons. The process is repeated until a human-understandable, desirable output is reached. Certain weights are adjusted for each neuron until random agreeable outputs are reached for any random inputs. In the application I've developed, neurons will be created for rhythm, pitch, duration, rests, etc. Each of these neurons will begin with equal weights and thus completely pseudorandom inputs. Over time, they will teach themselves to produce more appealing music. My fully developed application can procedurally generate completely unique music at the touch of a button. By altering weights in neurons and adding neurons for various aspects of music, different artists' styles can be replicated to increasingly proficient degrees of accuracy. By analyzing the various musical characteristics of styles my application seeks to replicate, unique music can be produced on-the-fly for the listener. The application is built for Android in such a way that users can carry around unique music in their pockets.

Awards Won: