NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineering

Music Generation with Deep Learning

Generating expressive music with music dynamics and syncopated rhythm

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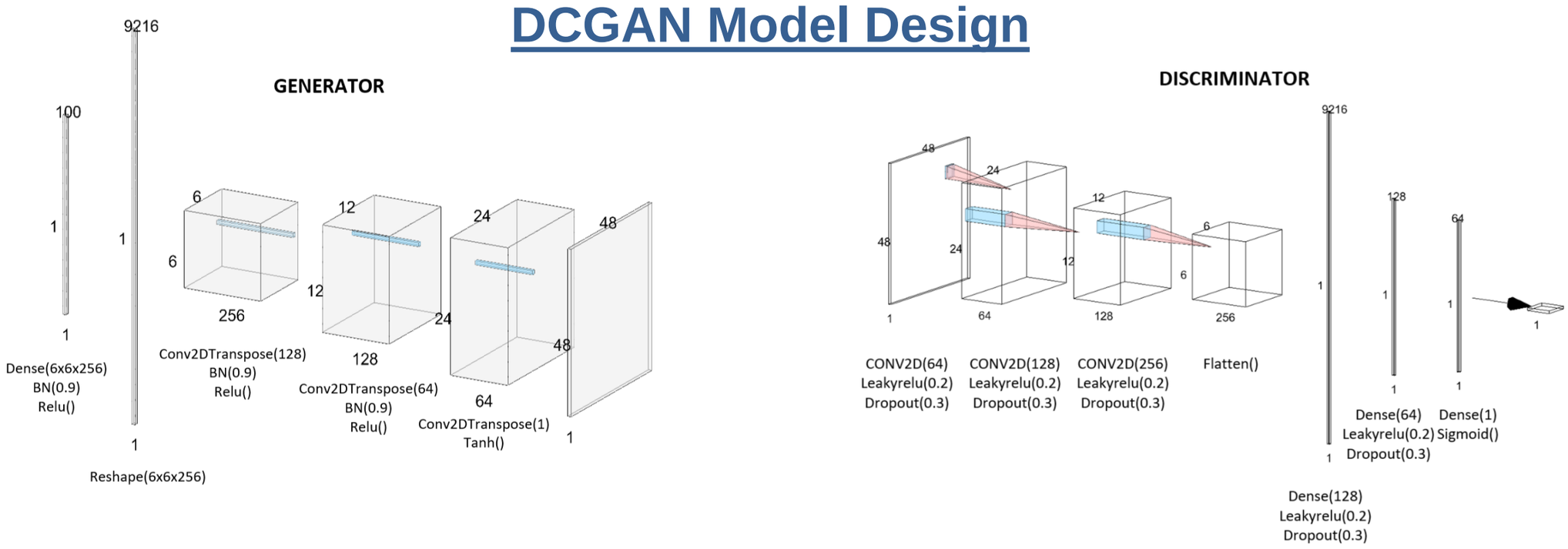
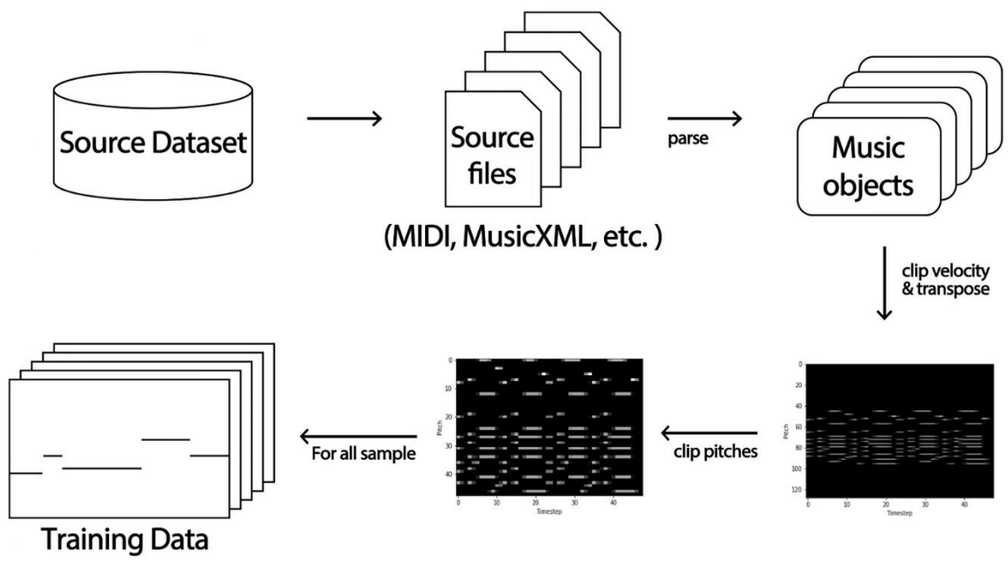
Majority of the existing research often focused on musical composition and removed expressive attributes during data preprocessing, which resulted in mechanical sounding, generated music. Hence, this project demonstrated the use of a **Deep Convolutional Generative Adversarial Network (DCGAN)** in generating expressive music with dynamics and syncopated rhythm.

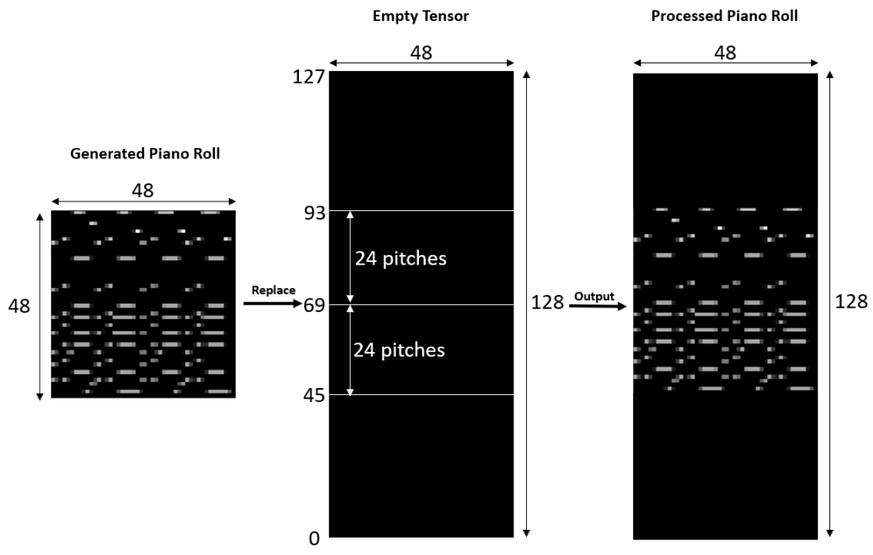
DCGAN Model Design



Data Preprocessing



Data Postprocessing



DCGAN Model Training

90 MIDI files downloaded from Cymatics sample pack were processed into training data. This training data was then fed into DCGAN to train both the generator and discriminator modes. After 20k epochs, both the generator and discriminator achieve Nash equilibrium. Generator was then used to generate music samples.

Results

✓ Generate expressive music with dynamics and syncopated rhythm

Listen to Excerpts by scanning this QR Code