

THE AI VIOLINIST

Crafting notes beyond human

Kari Primiano



AGENDA

01 | Objectives

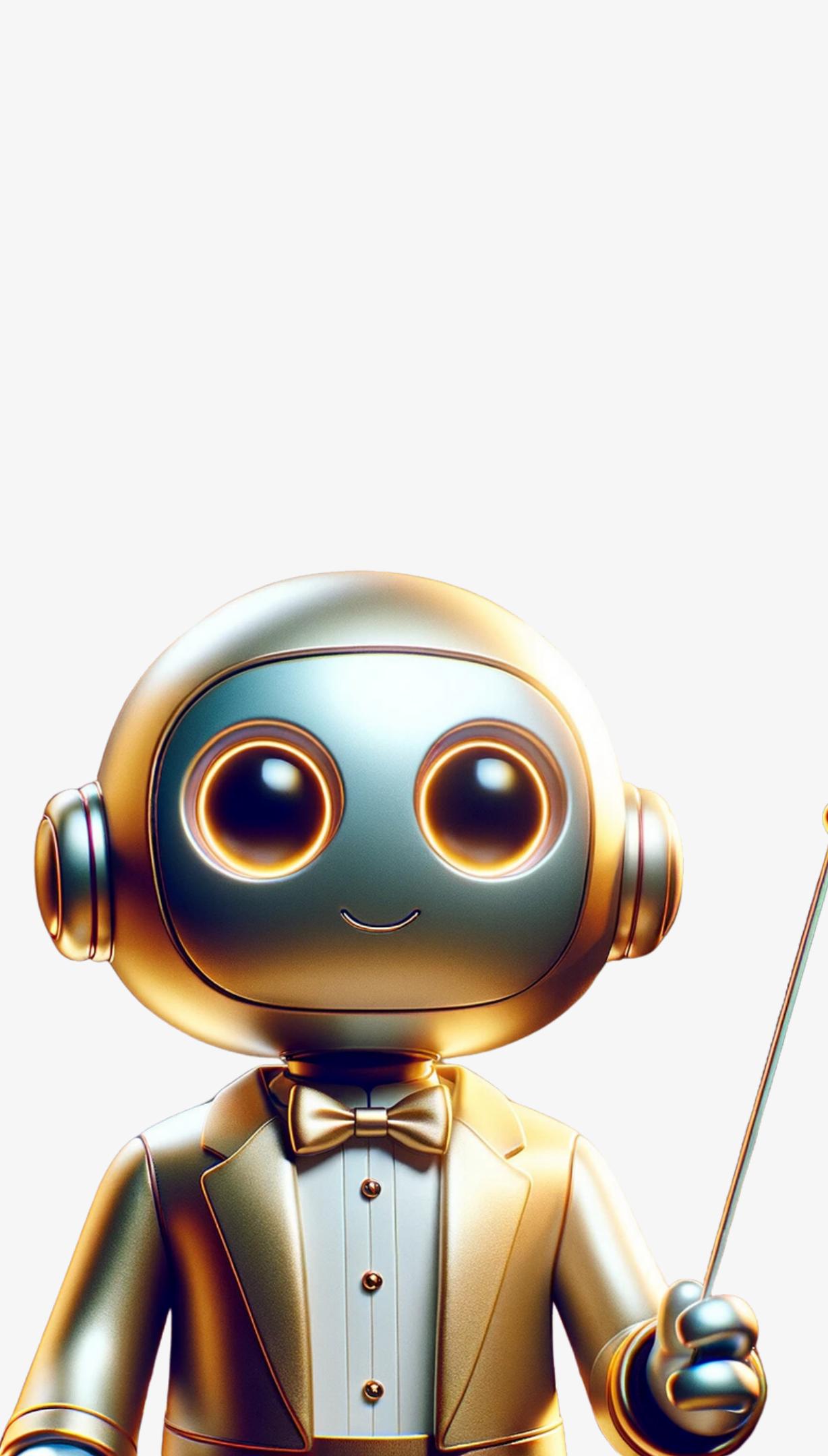
02 | Data Overview

03 | Technical
Architecture

04 | Model Analysis

05 | Final
Composition

06 | Next Steps



Business Objectives

Data Overview

Technical Architecture

Model Analysis

Final Composition

Next Steps

THE VISION

Teaching machines to create violin music on their own, and paving the way for new forms of artistic expression where AI plays a leading role in the orchestra.

THE MISSION

- 01** Audio Conversion
- 02** Audio Prediction
- 03** Audio Generation

DATA

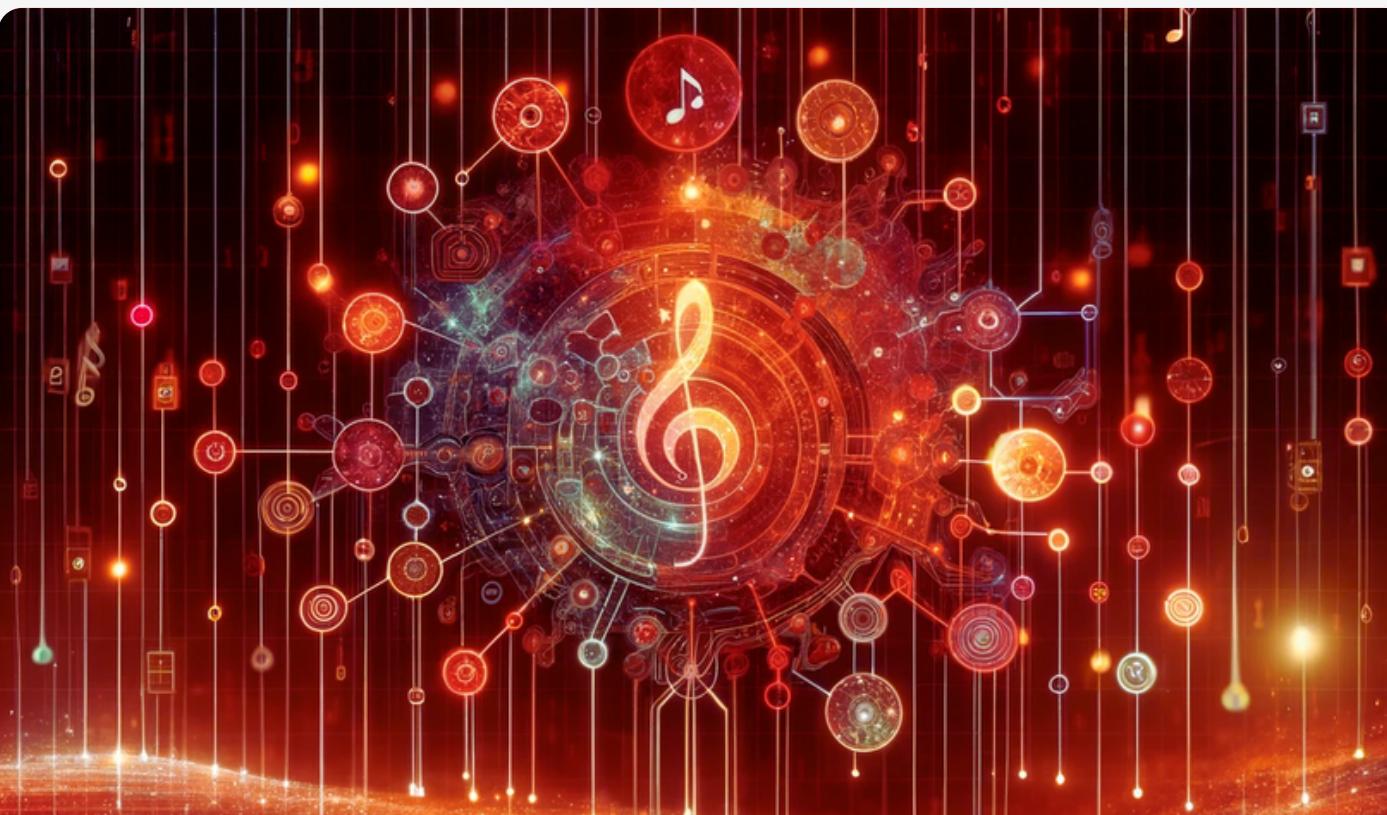
- 1,500 / 30s Violin Tracks
- 688 Spectrograms
- 150+ MIDI Files

LIMITATIONS

- The Power Struggle
- Multiple Model Complexity
- Harmonizing with Failure



TECHNICAL ARCHITECTURE



Convert to MIDI

- ♪ CREPE Pitch Extraction
- ♪ Rhythm & Tempo Analysis
- ♪ Pitch & Rhythm Alignment

WaveNet & LSTM

- ♪ Loss of Error
- ♪ Accuracy

Generate Music

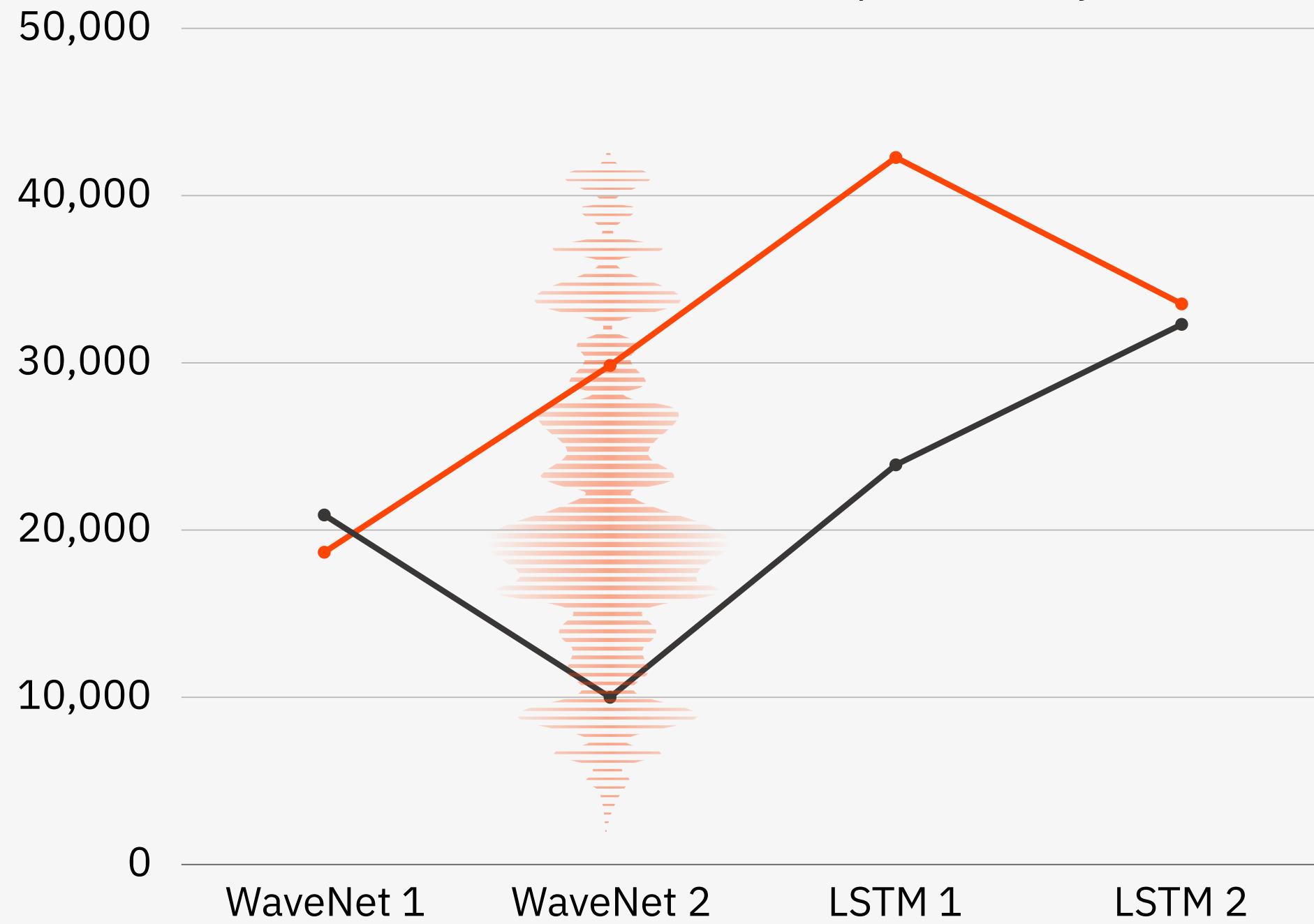
- ♪ Convert MIDI to WAV
- ♪ Evaluation Metrics
- ♪ Comparative Analysis

Pre-trained Model

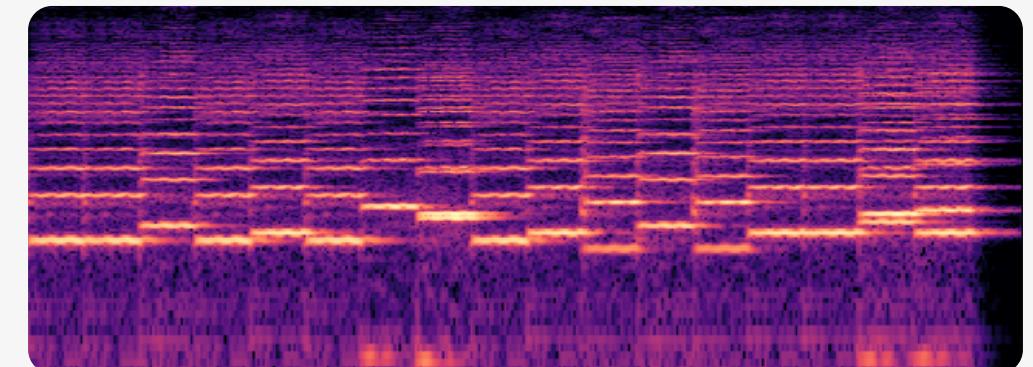
- ♪ Jukebox

PITCH & RHYTHM VARIANCE

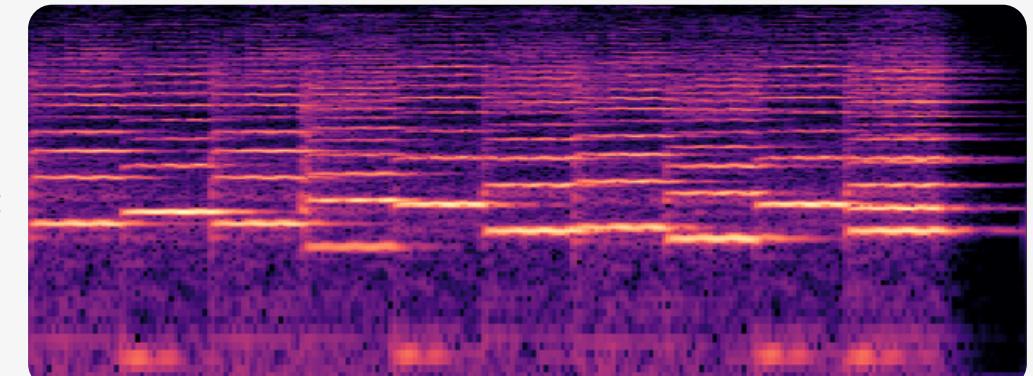
■ Pitch Variance ■ Tempo Variability



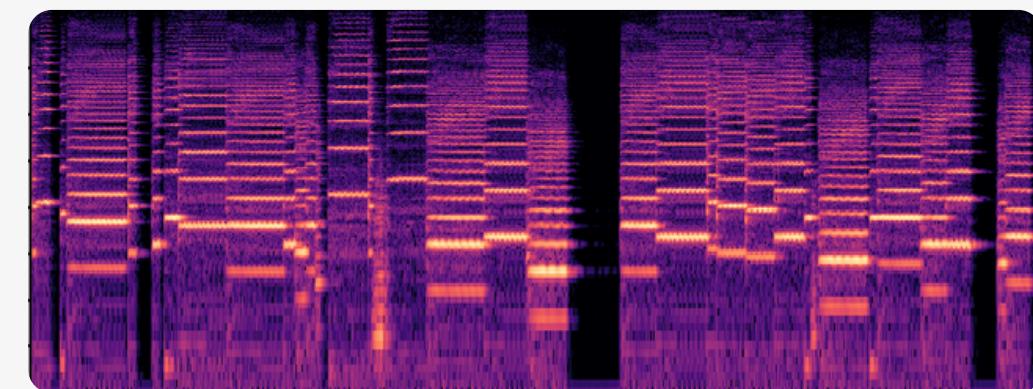
WaveNet 1



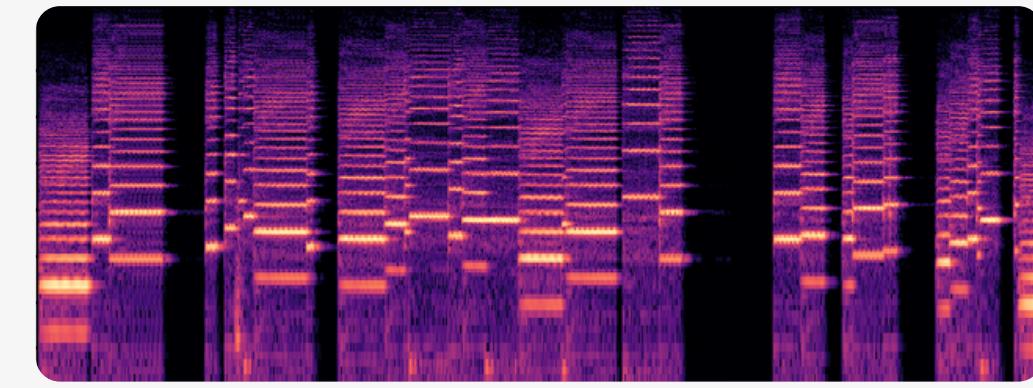
WaveNet 2



LSTM 1



LSTM 2



FREQUENCY

FINAL COMPOSITION

WaveNet 1



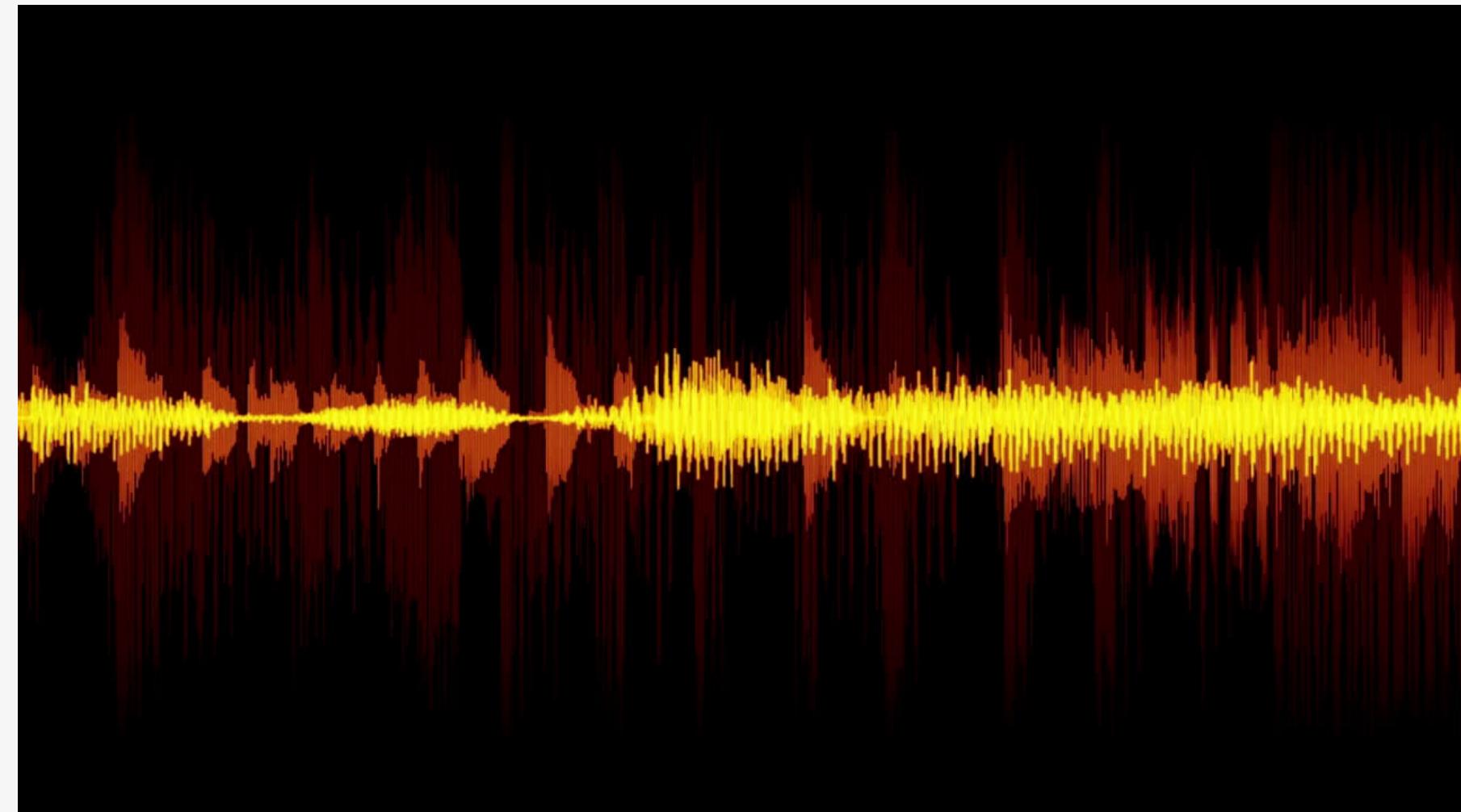
LSTM 1



WaveNet 2



LSTM 2



Business Objectives	Data Overview	Technical Architecture	Model Analysis	Final Composition	Next Steps

NEXT STEPS

This project shows that AI can not only understand music but also create it, and the results are pretty impressive, even with significant resource limits.



Boosting The Tech

More power! I'll need to beef up the computational capabilities to push these models further.

Refining MIDI Conversion Techniques

Continuous improvement and fine-tuning of the models to enhance the quality and diversity of the generated music starts with high quality audio.

A Symphony of Sounds

Why stop at violins? There's a whole world of instruments and styles to explore.

Next Steps



Thank You



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