

# 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

# 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

Business  
Objectives

Data  
Overview

Technical  
Architecture

Model  
Analysis

Final  
Composition

Next Steps

## Convert to MIDI

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

## Generate Music

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

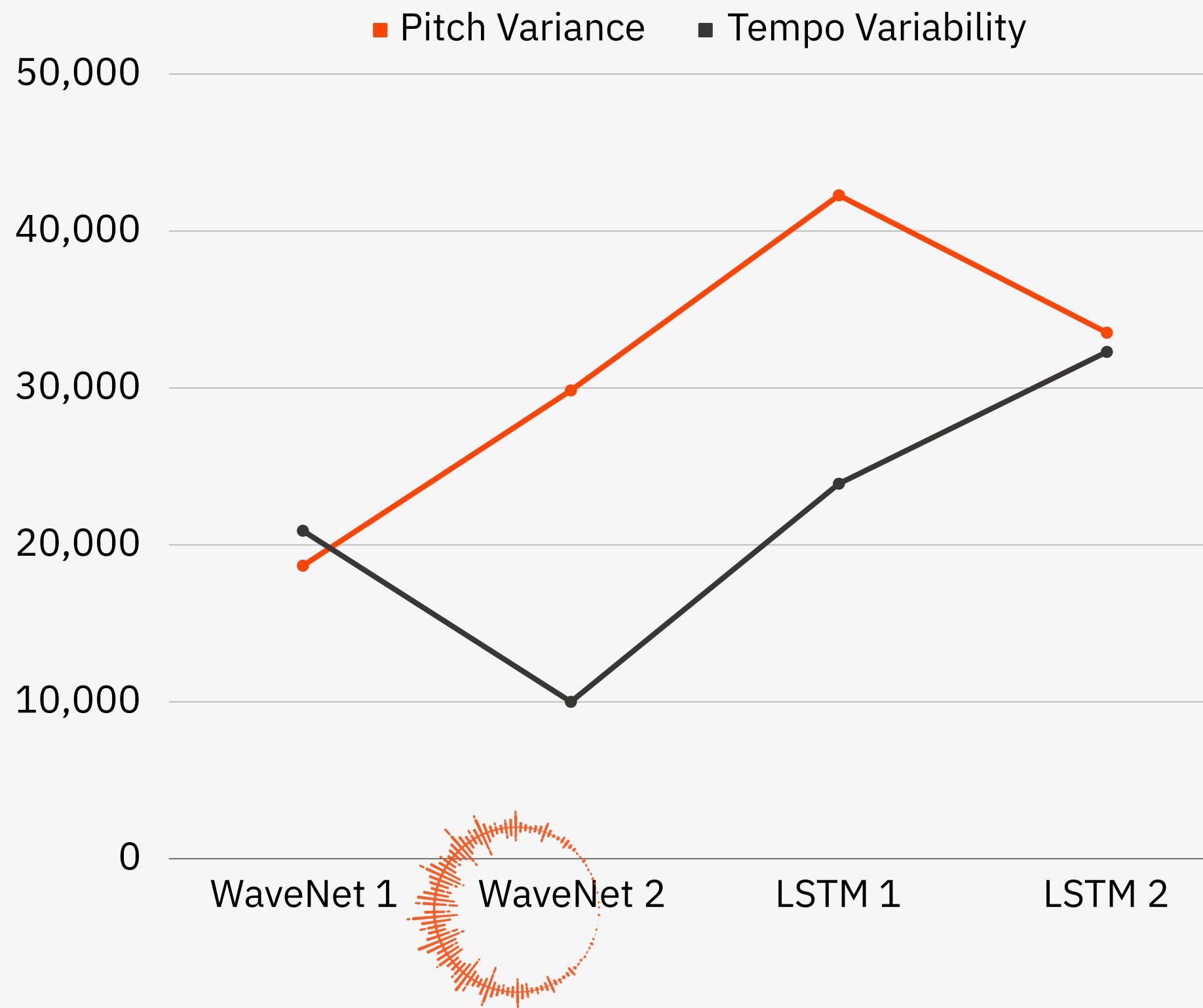
## WaveNet & LSTM

- ♪ Loss of Error
- ♪ Accuracy

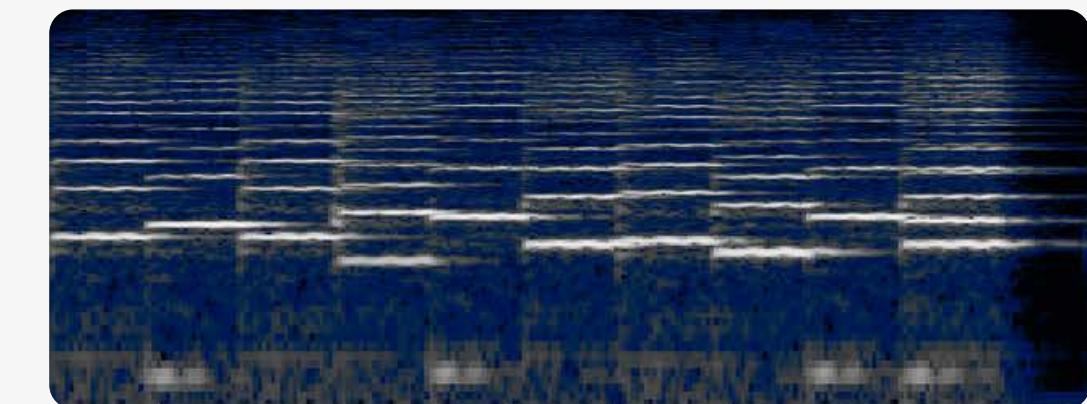
## Pre-trained Model

- ♪ Jukebox

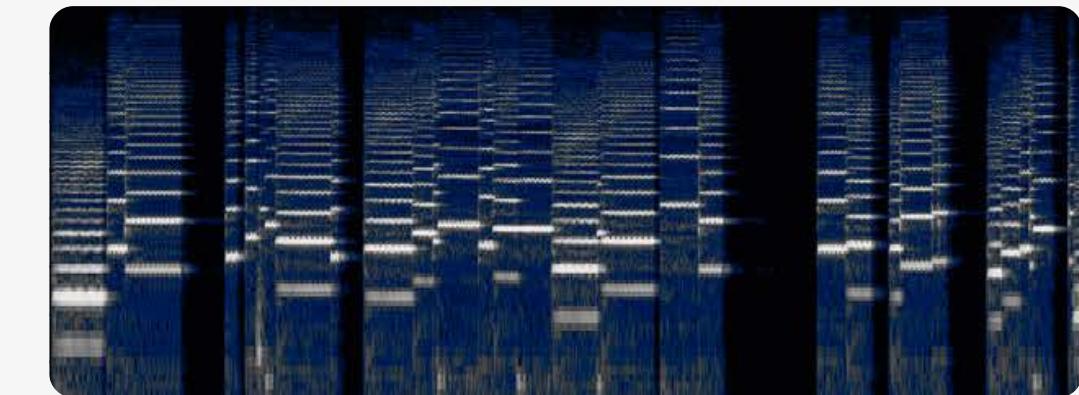
# PITCH & RHYTHM VARIANCE



## FREQUENCY



LSTM



# WAVENET



# LSTM



# FINAL COMPOSITION



# NEXT STEPS

This project shows that AI can understand music and create it, and the results are pretty impressive, even with significant resource limitations.



## ♪ 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.

# THANK YOU



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