

The background features several overlapping watercolor-style shapes in shades of blue and green. There are also clusters of small, dark blue dots in the corners. At the bottom center, there are faint, stylized line drawings of what appear to be musical notes or a hand.

Concerto in Bb

By: Tejas Srivatsav

Personal Background

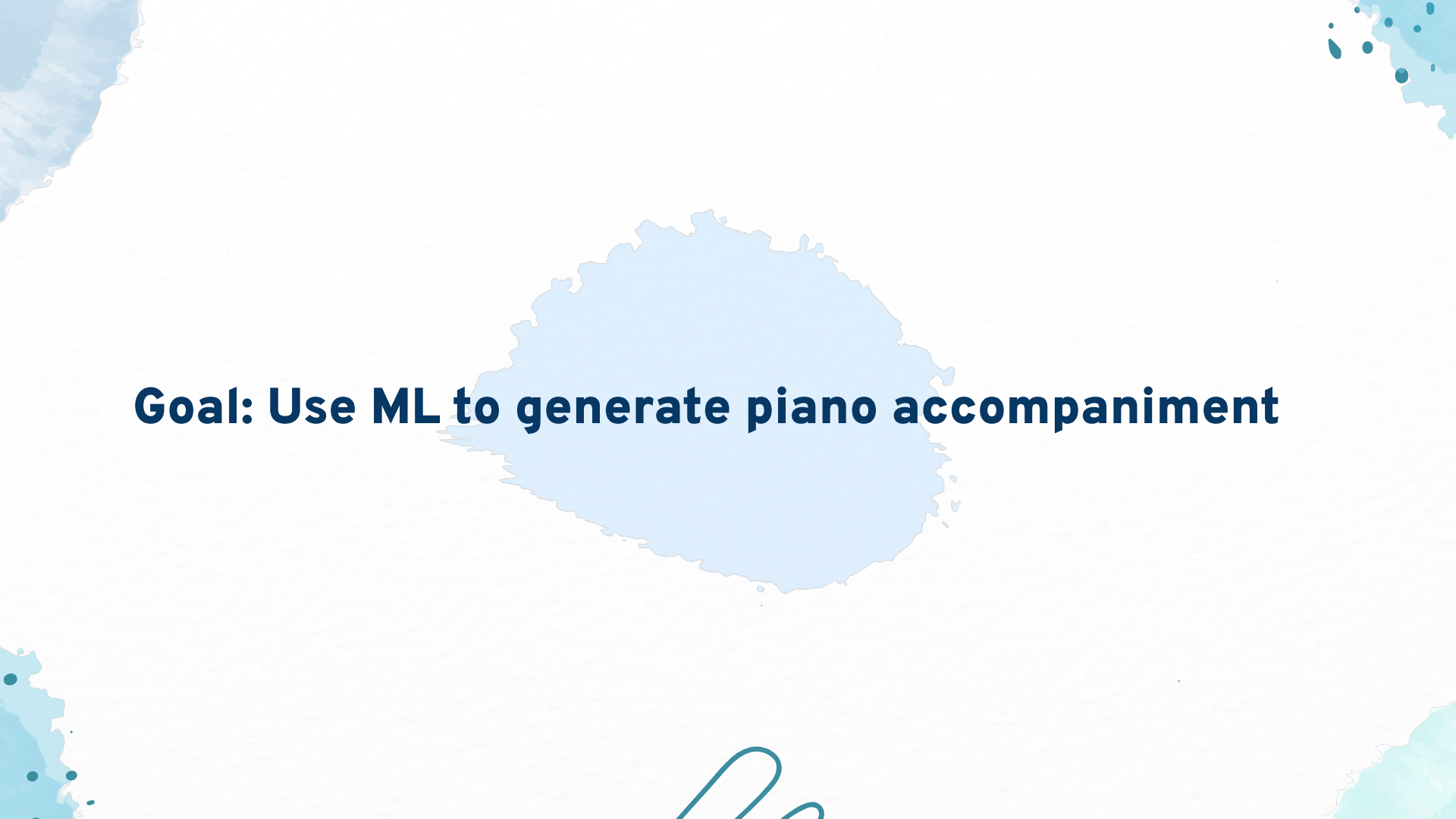
- Academics
 - MS Student in Electrical and Computer Engineering with ML background
- Music
 - Used to play jazz and classical trombone but lost all of my talent
 - Never had piano talent to begin with



Piece Background

- Nikolai Rimsky-Korsakov (1844-1908)
- Originally for trombone + whole orchestra but adapted for trombone + piano
 - But I lost the score for the piano accompaniment
- 3 movements – 10 mins total
 - I chose the 1st half of first movement
- Significant to me bc it was the piece I played for competition before my talents disappeared





Goal: Use ML to generate piano accompaniment

Process

1. Record trombone performance
2. Convert to MIDI
3. Edit using LMMS
4. Find desirable and free soundfonts for both trombone and piano
5. Generate numerous (>10) piano accompaniments for trombone
6. Stitch together best parts of each accompaniment on LMMS to create one overall piece

Record Trombone Performance

- 3 recordings
- Due to lack of practice I took liberties in replaying mistakes since I could edit later

Convert to MIDI

- Google Magenta Multi-Instrument Transcription
- Didn't work as well as I had hoped
 - Lots of noise/distortions were picked up
 - Model doesn't carry over velocities either

Edit Using LMMS

... and so I compensated for that by editing in all effects that were lost



Find Soundfonts

- <https://www.zanderjaz.com/downloads/soundfonts/>

Generate Piano Accompaniments

- Google Magenta Melody-Conditioned Music Transformer
 - Better at long-term structure compared to other models
- Generated ~10 samples
- Examples



Final piece :)



Limitations

- Logic Pro X $\rightarrow$ LMMS
- Style transfer to jazz
- Percussion Accompaniment
- Real-time



Thanks!