

Piano Palette

An exploration of music visualization through
augmented reality

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How might we evoke more meaningful emotions in people when they listen to classical piano music?

UX Research

Ellen Nguyen, Clarissa Wu

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Research Implications

Key Findings

- Music listeners associate different colors to music and respective genres based on personal experiences and memories = extremely subjective
- Emotional experiences were the same for each piano piece played
- Color plays a large role in conveying emotions, color and music go hand-in-hand

Design direction should focus on visualizing music characteristics accordingly with emotion

- Represented by AR objects and animations

Design

Josh Mao, Clarissa Wu

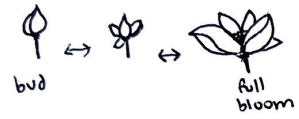
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Tempo

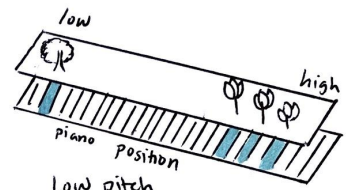
speed of beat
↳ pulsing

Volume

low ← → high



Pitch



Low pitch

dark, sad, ominous, serious
↳ trees, vines, grey cloud

High Pitch

(within singing range)
happy, light, fun
↳ flowers, dandelions, bees, butterflies

Chord Type

Major

happier objects
↳ bright flowers



Minor

sad objects
↳ rain, blue flowers



Rhythm

calm/consistent vs. unease/inconsistent
smooth

↳ small, gentle breeze

steady cloud



↳ abrupt gust of wind

↳ thundering clouds





Fun Facts

- **2700 frames** rendered
- **80 hours** of render time
- Made in Cinema4D + After Effects

User Testing

Conducted user testing by interviewing 9 participants to gain feedback on current creative direction for visuals and overall experience

- Test non-mainstream classical pieces for future iterations
- Visuals should span across the entire piano, with more interactions in corresponding areas
- More color and dynamic interactions
- Most individuals imagined nature scenes to with the music prior to showing the effects (major plus!)
- Visuals should grow with the song progression

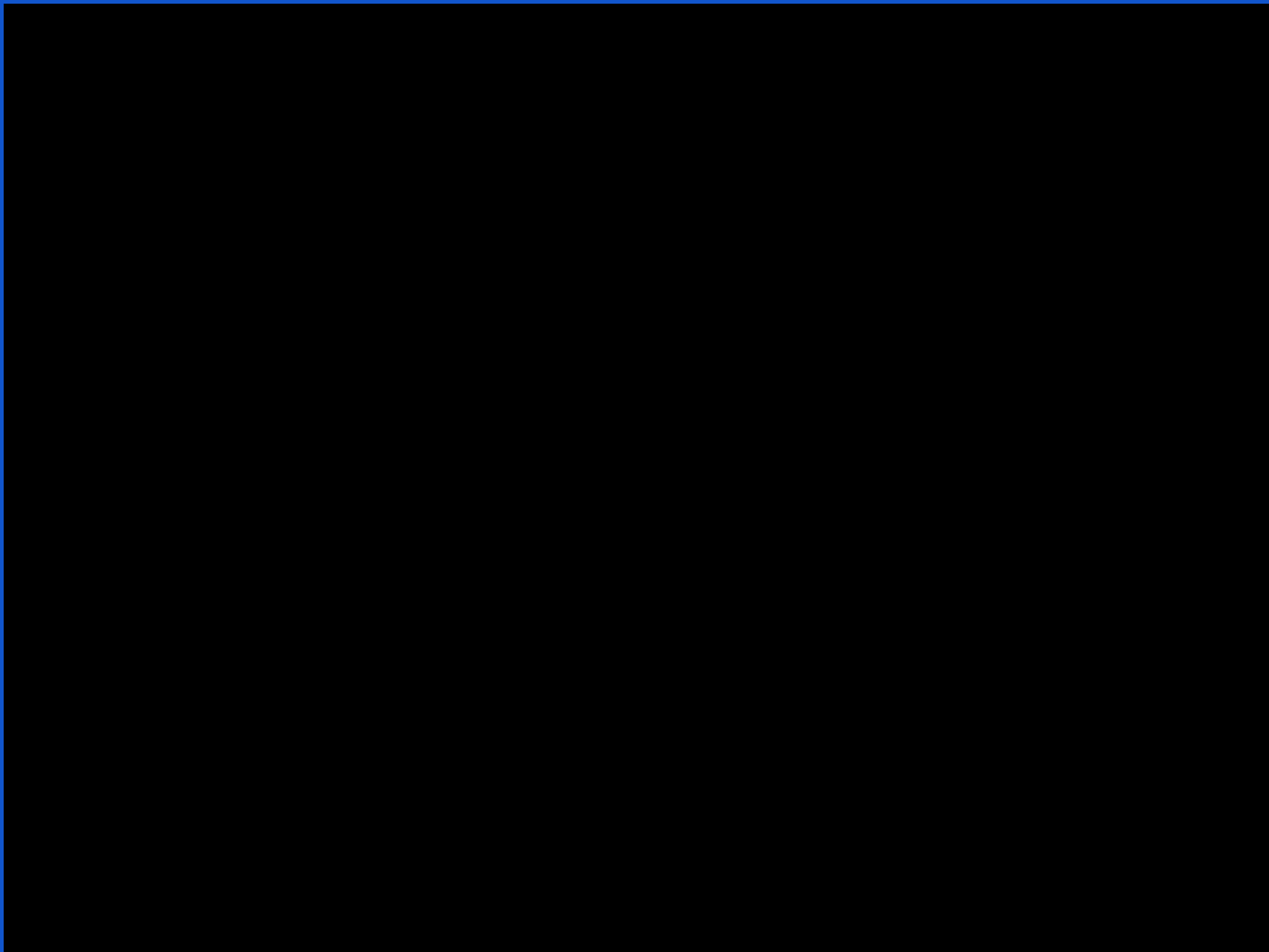
Development

Woojin Ko, Umang Srivastav, Edward Hwang

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Final App

- Ported animations over from Cinema4D to Unity
 - Importing FBX files
 - Attaching animator/controller
- Implemented animations
 - Spawning in desired locations
 - Timing to correspond with piano audio
- Improved visualization calibration and stability



Next Steps

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Next Steps

This has been a great project to work on and we're incredibly proud of the work we've done so far, that being said, if we had more time:

- Research
 - Conduct usability tests with next prototypes
 - Work with Design to implement first round of feedback
- Design
 - Better graphics/different types of visualizations
- Development
 - More variety for animations
 - Basic audio analysis
- General
 - 1-2 page research paper

Thank You!
Questions?

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