

# Full Bloom: Diegetic UI for musical phrases in virtual reality

Peter Armstrong<sup>1</sup>, Elliot Cole, Peter Ferry, Joe Geigel<sup>1</sup>, Susan Lakin<sup>1</sup>, Richard Swientonioski<sup>1</sup>, Zachary Talis<sup>1</sup>, and Jennie Thomas<sup>1</sup>

<sup>1</sup>Rochester Institute of Technology

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We propose a novel system for communicating musical note pitch and sequence information to users within a virtual reality environment. Our approach utilizes ‘Blooms,’ objects that resemble flowers with various petal arrangements. These formations, when constructed in view of users, act as diegetic, user-parsable encodings of their inputs. Blooms exist within the virtual space as simulated physics objects that collectively serve the role of a user interface.

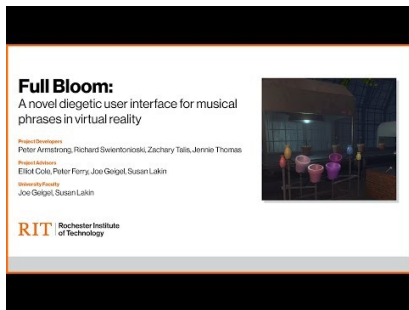


Fig. 1. A captioned video describing Full Bloom and its methodology. <https://youtu.be/pQ5Jlh8Mo3Y>

## I. PROJECT BACKGROUND

Beginning in February 2020, and inspired by Elliot Cole’s Flowerpot Music (Melanie Voytovich 2018), our team set out to develop a VR UI capable of communicating complicated musical phrases in a manner that is similarly pitch-agnostic. Prior research suggests that the motor actions involved with VR use facilitate learning by means of embodied cognition (Jang et al. 2017).

We hypothesize that a UI that instead utilizes diegetic interactions between musical phrases and VR objects would engage the spatial memory processes critical to embodied cognitive tasks.

Full Bloom draws upon the work of percussionist Peter Ferry. A graduate from the Eastman School of

Music, Ferry explores the acoustic properties of common objects through his work leading large group performances on flowerpots. Full Bloom expands upon what we term the ‘household musicality’ of instruments such as these.

## II. PRESENTATION FORMAT

We have recreated the Full Bloom environment within Mozilla’s Hubs platform. Scattered throughout the space are different pieces of media Full Bloom-related media, including the video embedded within this document.

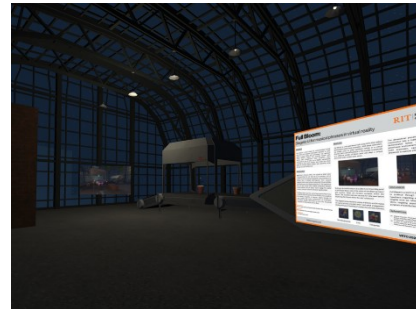


Fig. 2. A screenshot of the Hubs room for Full Bloom. The greenhouse space of Full Bloom has been optimized for the format of a virtual conference. <https://i.imgur.com/aR5HPWZ.png>

## III. REFERENCES

- Jang, Susan, Jonathan M. Vitale, Robert W. Jyung, and John B. Black. 2017. “Direct Manipulation Is Better than Passive Viewing for Learning Anatomy in a Three-Dimensional Virtual Reality Environment.” *Computers and Education* 106 (March): 150–65. <https://doi.org/10.1016/j.compedu.2016.12.009>.
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