

Social

Sahar Aseeri
Ph.D. Student at UMN

Painting

Zixiao Wang
BS Student at UMN

Problem Definition

Since most of the paint virtual reality applications are allowing only one user to interact with the 3D environment, we tended to implement a mobile application using Google Cardboard to enable the idea of social virtual reality painting. This project allows people to be in a 3D shared environment in order to interact and communicate together at the same time. Moreover, this project will help to improve the concept of virtual reality in order to make it more immersive and fun for the users in a real time.

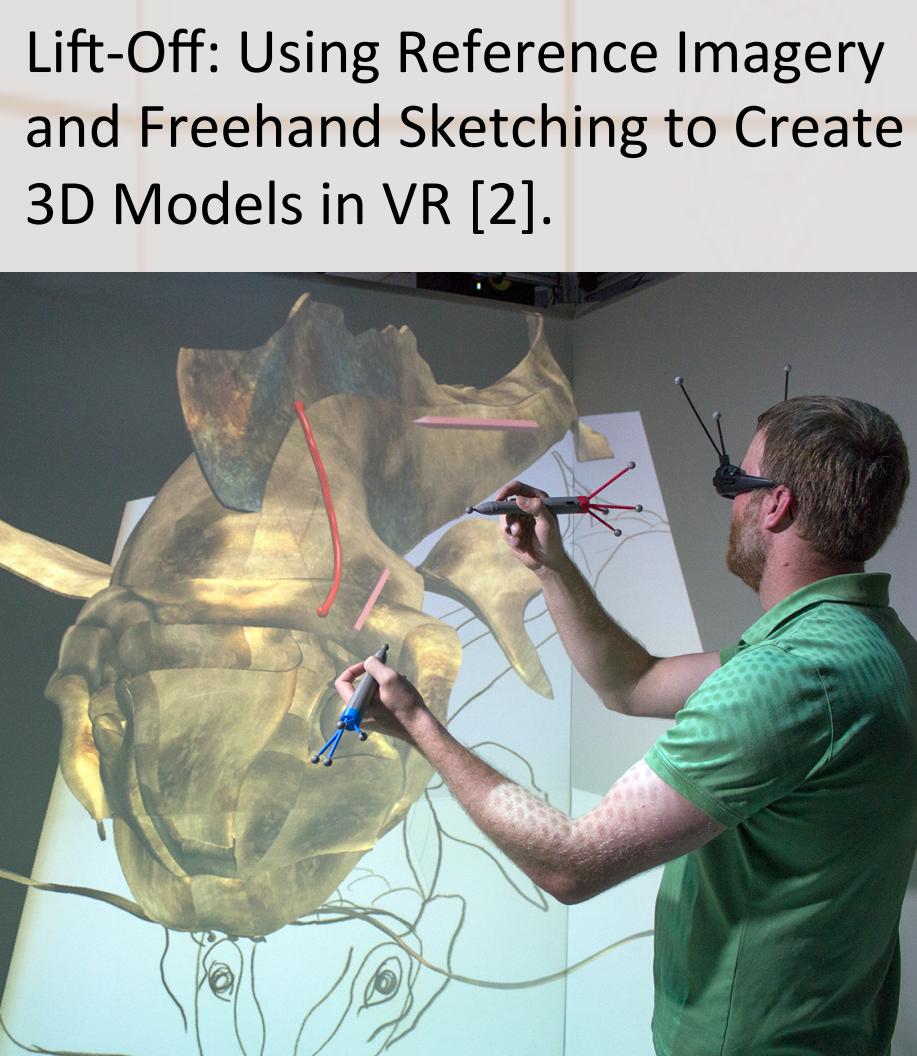
Related Works

Cave Painting



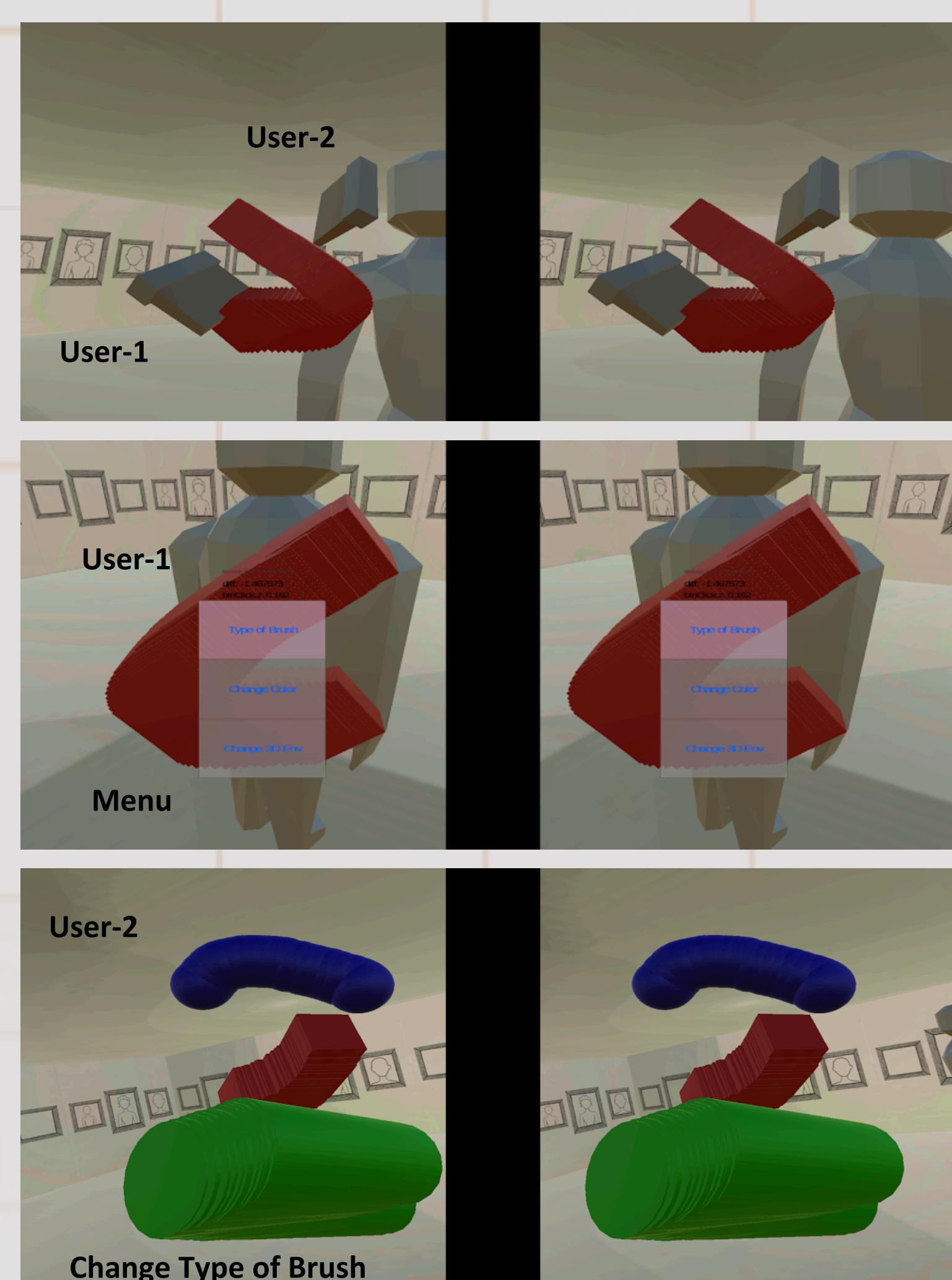
CavePainting: A Fully Immersive 3D Artistic Medium and Interactive Experience [1].

Lift-Off



Lift-Off: Using Reference Imagery and Freehand Sketching to Create 3D Models in VR [2].

Results



Contributions

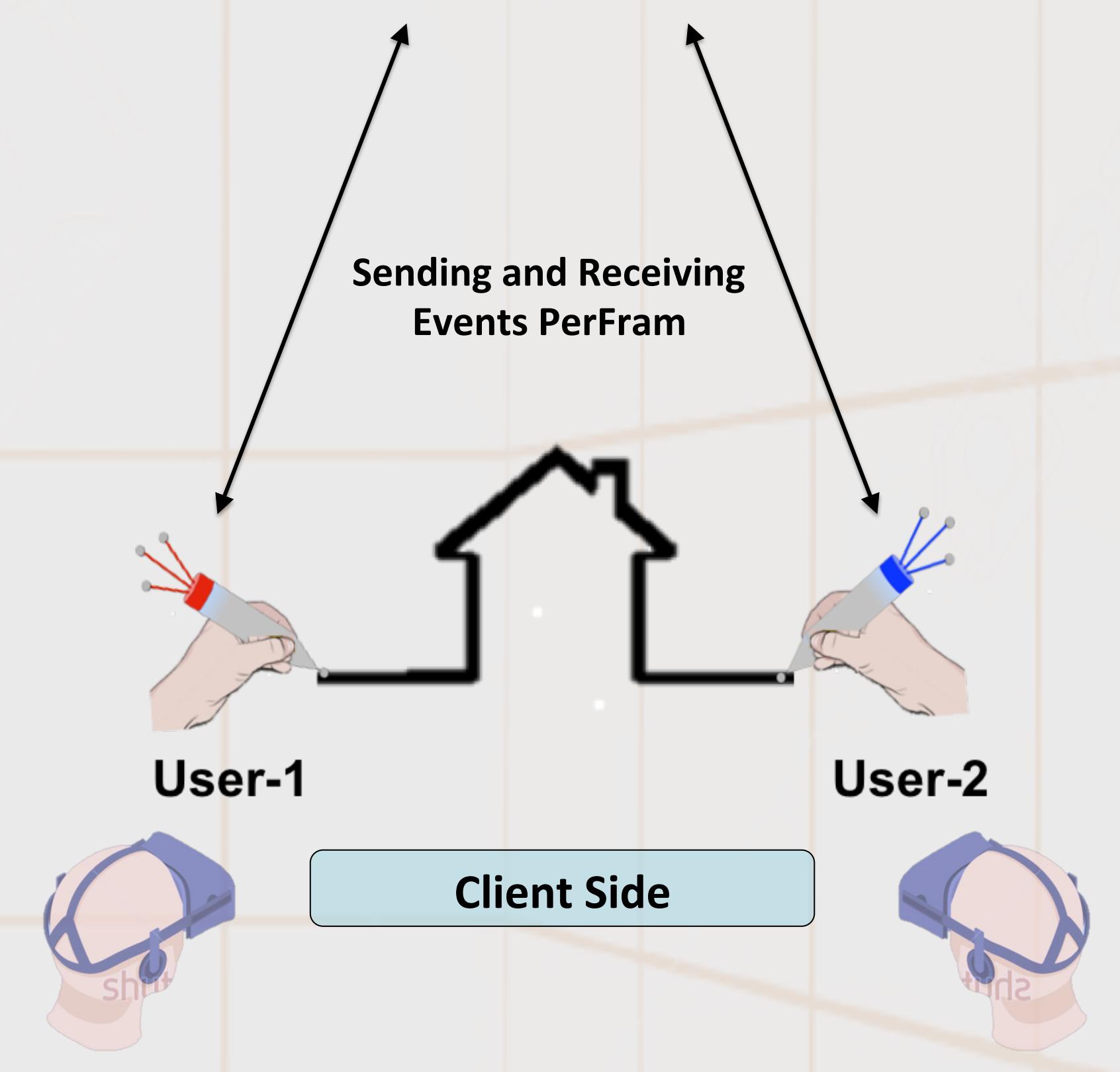
- This project proposes a new method of 3D painting, which allows users to paint a 3D painting together using smartphones and tracking system.
- Allows user to create an individual painting or a collaborative painting with other users.
- Increase the immersion and sense of presence in the 3D environment since the user can interact together in the real and virtual time.

Motivation

- This research could help people in different fields such as Art, Architecture, Engineering, and others fields in order to draw, design, and discuss about their work.
- This research is very important for games, which makes the games more interactive by allowing gamers to play and interact in a 3D immersive environment with other users.

Methodology

Server Side
List of events from all the users
Head_Move_User_1
Brush_Move_User_2
Head_Move_User_2
Change_Brush-User_1
...
...



Future Works

- Allowing more than two users to share the same 3D environment.
- Improving the environment, the menu, and add more brushes to simplify the painting for the user and make it more attractive and fun environment in collaboration with MCAD students.
- Expanding the project to allow people to share the 3D painting locally and globally at the same time.
- Replacing the 3D avatar by using 3D scanning, which is represent the users in order to increase the immersion and sense of presence.

References

- [1] Keefe, Daniel F., Daniel Acevedo Feliz, Tomer Moscovich, David H. Laidlaw, and Joseph J. LaViola Jr. "CavePainting: a fully immersive 3D artistic medium and interactive experience." In Proceedings of the 2001 symposium on Interactive 3D graphics, pp. 85-93. ACM, 2001.
- [2] Bret Jackson and Daniel F. Keefe. "Lift-Off: Using Reference Imagery and Freehand Sketching to Create 3D Models in VR". in: Proceedings of IEEE Virtual Reality. 2016.