



Mentored by the
Advanced Visualization Laboratory

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Project Objective

Researching Hand Tracking and 3D Gesture Recognition with the Leap Motion device.

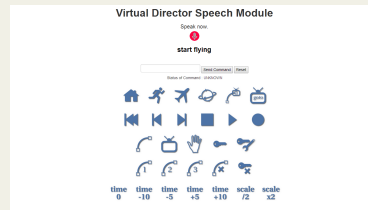
Integrating 3D Gesture Recognition, Voice Recognition and Voice feedback into Virtual Director to create a more interesting and immersive experience for interacting with 3D Visualizations.

Approach

- Designing Gesture Recognition protocol using the Leap Motion Device
- Designing multi-client server model for allowing multiple devices to interact with 3D display.
- Creating web application for interacting with Virtual Director
- Adding Speech Recognition and voice feedback to make the experience more interactive.
- Adding in dynamic configuration of voice and commands and audio feedback

Status

- Developed fully integrated nodejs framework for 3D Hand Tracking and support for multiple gestures using a web-based application
- Support added for Google Speech Recognition and Google Text to Speech for audio feedback
- Server Client framework revamped to add support for multiple users.
- Added dynamic configuration of Virtual Director Voice commands and Speech Feedback using Google Spreadsheets
- Built Flight simulation demonstration using Oculus Rift and Leap Motion with Colter Wehmeier.



Web-based framework for issuing Speech Commands



Multiple Leap Motion devices interacting with Virtual Director

A	B	C	D
Voice Command	Speech Command	Virtual Command	Output
1	start navigation	Starting navigation	start navigating start navigate
2	stop navigation	Stopping navigation	stop navigating stop navigate
3	fly	flying	start flying start to fly the start flying
4	stop mode	stopping	
5	stop	stopping	
6	start animation	Starting animation	run
7	go to beginning	Going to beginning	time 0
8	attach to path	Attaching to path	attach_path
9	play along path	Playing along path	attach_path/stop
10	play the path	playing	play
11	create keyframe	created keyframe	key
12	save camera position	saved	key
13	save view	saved	key
14	adjust camera	adjusting	adjust
15	go to the next	next one	next + 1
16	go back	going back	next - 1

Dynamic Configuration Tool for changing Voice Commands and Audio feedback

CHECK OUT THE
LIVE DEMO IN
1005 !!

Questions

- How does the Leap Motion device compare with other products out there?
- What are future applications for VR using Leap Motion and other tracking devices out there?
- What are the possibilities of using Leap in arenas other than VR?