



PROJECT ROSTER

FALL 2015

TIER 1: ADVANCED PROJECTS

Augmented Reality Interfaces for Drone Control

FALL & SPRING

Design and create AR/VR interfaces for the Microsoft HoloLens that allow you to control multiple drones using hand gestures.



TEAM LEAD

Rohit Swamy

ABOUT THE PROJECT

Were you enamored by Iron Man's HUD? So were we. Our team will be exploring the uncharted territory of AR interfaces, mainly focused on drones. We will be developing interfaces that will allow users to simultaneously control multiple drones with potential applications including charting out buildings, aiding with search and rescue missions and also simply making drones easier to control. Our team will be working together with professors, graduate students and other VR research teams to design compelling interfaces for the HoloLens and other AR devices.



DJI PHANTOM

TEAM ROLES

UI/UX Designer [x2]

Does the thought of designing the future appeal to you? We are looking for passionate individuals who are eager to explore the uncharted territory of VR/AR interfaces. Previous design experience highly recommended.

3D Artist [x1]

Work together with our design team to implement and create components needed for our interfaces. Previous modeling experience highly recommended.

General Researcher [x3]

Ready to explore the unknown? Our teams project requires a variety of skills including SLAM, image processing, and various software integrations. If a challenge excites you, you have found the right group.

Heads-up Display Augmented Reality Glasses

FALL & SPRING

Create augmented reality glasses that allow hand interactions with virtual objects.



TEAM LEAD
Will Huang

ABOUT THE PROJECT

The HUD project is an open-ended research project with the short-term goal of creating a rudimentary augmented reality platform in preparation for future gesture controlled robotics projects. The project integrates depth sensors and transparent display glasses in a head-mounted platform to prototype the collection and display of information within a virtual or augmented reality system.



TRANSPARENT
DISPLAY GLASSES

TEAM ROLES

3D Artist [x3]
Experience in blender or Autodesk Maya (or equivalent).

Image Processing [x1-2]
Work on reconstruction of real environments in the virtual world through depth maps and RGB camera output.



Simultaneous Localization and Mapping (SLAM) with Google Tango

FALL

This research-oriented project aims to implement an effective SLAM solution for mobile platforms, allowing them to understand and interpret their location and their surrounding environment.



TEAM LEAD

Victor Sutardja



GOOGLE TANGO
DEV KIT

ABOUT THE PROJECT

SLAM (Simultaneous Localization And Mapping) is the problem of mapping an unknown environment while at the same time keeping track of the agent's location within that environment and its mapping. This allows computers to better understand the physical spaces people work in and allows for a more consistent augmented/virtual reality experience while also being useful for flight control & safety. There is already a lot of research out there about SLAM, but in different contexts; our intent is to develop a solution for this problem that is both robust and efficient enough to be used on a mobile sensing and computational platform such as a drone.

TEAM ROLES

Android Developer [x1]
Java and C NDK.

OpenGL Developer [x1]

Computer Vision Researcher [x1]



Visualizing 3D and 4D MRI Data with the Rift

FALL & SPRING

Rendering MRI data and building UI for virtual platforms.



TEAM LEAD

Hansen Ling

ABOUT THE PROJECT

There are many applications for VR in the medical field and we hope to explore one of these opportunities with this project. We are looking to render 3D and 4D flow MRI data for use in a virtual reality platform such as the Oculus Rift. This project addresses the challenge of building a UI in the virtual reality space that provides better intuition than a screen. We hope to build a new way to view MRI data and that uses the capabilities of virtual reality user interfaces to better understand the data.



OCULUS RIFT

VR HEADSET

TEAM ROLES

Does the thought of designing the future appeal to you? We are looking for passionate individuals who are eager to explore the uncharted territory of VR/AR interfaces. Previous design experience highly recommended.

UI/UX Designers

Explore a new field by creating UI for virtual reality platforms. Previous design experience highly preferred.

OpenGL Developer

Work on rendering MRI data and the challenges of being able to efficiently view data using OpenGL. Put your graphics and linear algebra knowledge to use!



Virtual Campanile

SPRING

Design and create an immersive/interactive virtual Campanile using VR headset and gesture recognition.



TEAM LEAD

Yulin Zheng

ABOUT THE PROJECT

The Virtual Campanile project will be presented at Cal Day 2016. The intent is to provide people the chance to play a musical instrument that can be easily played in virtual reality but is not usually accessible on campus. It will incorporate a VR headset, the Oculus Rift, to simulate a fully immersive experience of playing the Campanile, and use a finger tracking device, the LEAP Motion controller, for users to physically interact with its keyboard. This project will be developed using the Unity game engine because of its good Oculus and LEAP support.



SATHER TOWER
(REAL REALITY)

TEAM ROLES

Developer [x1]

Experience in Unity/Oculus/Leap (or equivalent).

3D Artist [x2]

Experience in Blender (or equivalent).

Sound Sampling [x1]

Experience in FL Studio (or equivalent).



TIER 2: TRAINING PROJECTS

Oculus Demos with the Force-Feedback Triple-Axis Motion Simulator

FALL

Integrating the Oculus Rift with a 3 axis force feedback driving simulator.



TEAM LEAD
Hansen Ling

ABOUT THE PROJECT

Last semester, we used the Unity game engine and the Oculus Rift to create the experience of driving in a virtual environment. We integrated the Oculus Rift with a Force Dynamics triple-axis force-feedback motion simulator, replacing the three monitors mounted on the simulator. The driver can now put on an Oculus Rift and have a fully immersive driving experience with 360 degrees of vision in addition to force feedback. This team will continue to build content for the simulator by creating immersive driving experiences and improving the accuracy of the tracking.



**MOTION
SIMULATOR**

TEAM ROLES

Unity Developers

Want to get involved in the virtual reality field or learn how to work the Unity game engine? Get plugged in and help improve our simulator project.

3D Artists

Know how to create 3D content with Maya, Blender, or the like and want to learn how to apply those skills to VR content creation? Join this team to learn about how to bring 3D content to life with VR.

Designers

Apply your design skills in a field where good design choices can lead to awe-inspiring experiences and poor design choices have serious physiological consequences!



VR Demos for Halloween

FALL

Design and build VR experiences for a Halloween demo day using immersive headsets and gesture controllers.



TEAM LEAD

Yulin Zheng

ABOUT THE PROJECT

Learn to work with the Unity game engine and a variety of VR equipment while creating demos for a Halloween themed demo day. Members on this team will work together to design compelling demos that show off the strengths of VR and exploit immersiveness to create thrilling and entertaining experiences for the public while building the skills needed to implement, test, and iterate on the ideas.



DEMOS AT
CAL DAY

TEAM ROLES

Unity Developers

Want to get involved in the virtual reality field or learn how to work the Unity game engine? Get plugged in building demos that let other people experience VR.

3D Artists

Know how to create 3D content with Maya, Blender, or the like and want to learn how to apply those skills to VR content creation? Join this team to learn about how to bring 3D content to life with VR.

Designers

Apply your design skills in a field where good design choices can lead to awe-inspiring experiences and poor design choices have serious physiological consequences!



TIER 3: MEMBER INITIATED PROJECTS

Got An Idea For A Cool Project You Want To Work On?

FALL & SPRING

Start your own project, find a team, get support, make something cool.

We've done a lot of work lining up what we think are really cool projects to get people involved in doing research and development in VR, and ultimately using VR to make a difference. Of course, the projects we've picked aren't the only worthwhile projects out there--not by a long shot!

If you have an idea for a cool VR project (or are working on one already), let us know! We'll help you build a team, find mentorship, and get access to equipment and work space to make your project a success.



OCULUS RIFT



AR GLASSES



GOOGLE TANGO



GOOGLE
CARDBOARD



LEAP MOTION

