COLLEGE OF ENGINEERING

Electrical Engineering and Computer Science

CS48

Nexusphere

Catch the moment with a Livestream Portal.

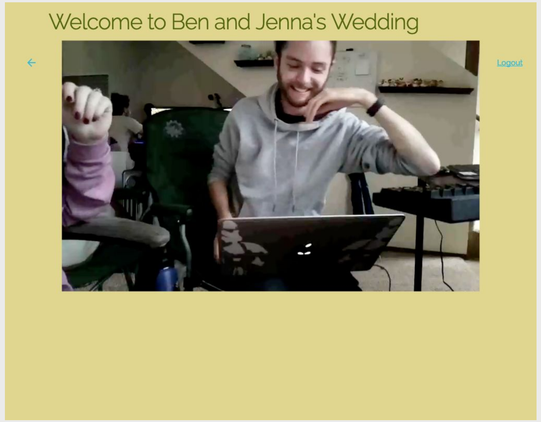
NEXUSPHERE BRINGS EXPERIENCES TO FAMILIES

- Supreme Court decision to uphold the travel ban is preventing some families from attending important events in the United States
- Our sponsor is getting married and their family is unable to attend because of the travel ban

AN ACTIVE WEB PORTAL WITH MANY FEATURES

- The project includes an interactive web portal for family members to view our sponsor's wedding
- Lightweight and portable devices will be custom made and used for streaming
- The admin can edit the camera locations, add and delete devices, and change the current, viewable map
- There is no hard limit on the number of devices that can be added
- Viewers can select any camera to see and hear the wedding ceremony live
- To give the event a degree of privacy viewers login in with a token

Oregon State University



DESIGN

- Three devices each consisting of a raspberry pi 3 B+, a camera, microphone, and battery
- Each device will be connected to the venue's WiFi and will be capturing both video in either normal view or in 360 degrees
- The devices at the venue will stream all of the video to be viewed on the website
- Devices work independently from one another therefore in case of a failure with one, the others are unaffected

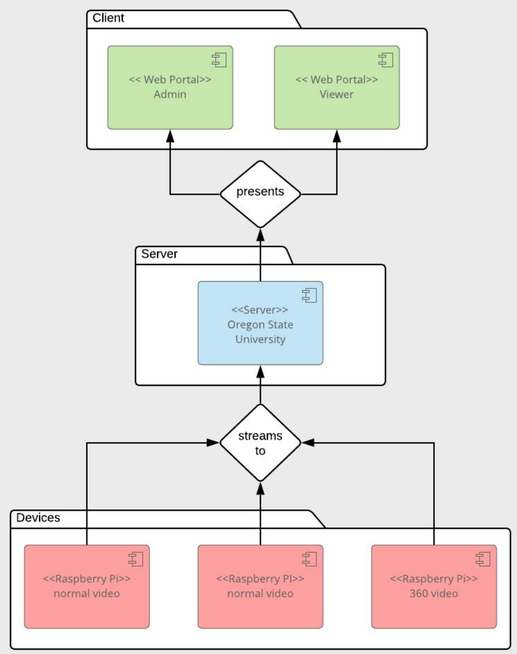
A-frame

- A Javascript framework for streaming 360 degree video developed by Mozilla
- Developing with A-frame is done by working with an html file without needing to download software
- We are using an A-frame videosphere to project the video coming from our 360 camera to a VR scene viewable on the web

Normal Video

- We are using the HTML5 video tag to display the video, leaving the formatting up to the end user's browser to display.
- We are using picam to record and stream the audio and video from each raspberry pi
- The video is streaming in the HLS format, unfortunately this format isn't supported by most desktop browsers so we are using the hls.js library to convert it to a viewable format

SYSTEM OVERVIEW



SERVER ARCHITECTURE

- LAMP (Linux, Apache, MySQL, and PHP)
- The devices will stream video by port forwarding to an OSU server where it will then be served to the website

ACKNOWLEDGEMENTS

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ABOUT US

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360º CAMERA

- The 360 degree video camera was made using an iPhone camera attachment and a raspberry pi
- The camera module was modified to fit onto the raspberry pi using a case created with a 3D printer
- The video will be "unwrapped" so it is viewable, and then sent to the web portal to be viewed by the client's family