EE / CprE / SE 491 – sddec18-12

360 Webcams for Zoos and Aquariums

Week 03 Report: 2018.02.04 - 2018.02.10

General Information

Client: True 360 (Christopher James)

Faculty Advisor: Dr. Henry Duwe

Team Members:

Name	Primary Role	Secondary Role(s)
Nathan Cool	Front-End Engineer	Project Manager, Webmaster
Zach Newton	Front-End Engineer	Scrum Master, QA
Ian Jamieson	Back-End Engineer	Graphics Lead
Alan Negrete	Back-End/Database Engineer	Scribe, QA
Tarek (TJ) Yacoub	Embedded Engineer	Communication Lead, QA
Hosam (Sam) Abdeltawab	Embedded Engineer	Software Architect

Weekly Summary

The past week was primarily dedicated to creating our project plan (version 1.0.0) document. We had several extended meetings with our group + client + faculty advisor in order to flesh out as many details as possible. We also spent individual time working on technical aspects including continued research of front-end, back-end, database, and embedded components for our system's architecture.

Past Week Accomplishments

Nathan:

- Project Plan
  - Spent significant time organizing, writing, and refining the document.
- Technical
  - Continued researching potential architectural components for our system and familiarizing myself with the pros and cons of the components our team has discussed thus far.

Zach:

- WebApp Development
    - Starting app skeleton
    - Research Redux

Ian:

- Camera Limitations
    - Researched camera limitations for Garmin Virb and other 360 camera options.
    - Researched the issue of storing the video while live streaming.
- Software Limitations
    - Looked into various software / hardware options for streaming video to Youtube.
    - Got familiar with the OBS software.

Alan:

- Familiarizing with the OBS repo & researching the possibility of creating a web plugin.
    - Could also be a mobile plugin (android)
- Testing with NodeJS

TJ:

- Camera Related
    - I have looked more into software to transcode streams from one protocol to another (Gstreamer).
- Server related
    - Explored complete products like wowza that handles streams for multiple webcams.

Sam:

- Project plan.
- Research more camera related issues
- Played around with SQL & MySQL for database purposes.
- Played around with HTML for web development purposes.

Recent Group/Client/Advisor Meetings

Date, Time, Location	Participants	Details
2018.02.05, 13:15 - 14:45, Library 003	Group + Client	Discussed potential system architecture options
2018.02.08, 15:30 - 16:30, Coover 3138	Group + Client + Advisor	Continued discussion of system architecture
2018.02.09, 14:00 - 17:00, Arcadia Cafe	Group + Client	Completed project plan version 1.0

Pending Issues

Nathan: The two most important issues which need to be resolved as soon as possible are choosing an appropriate architecture for our implementation and solidifying a list of concrete requirements.

Zach: A big issue that is facing us right now is how to stream video programmatically from camera to web player. Currently we are running through OBS to YouTube, which could become a pain. It might be worth our time to look into making our own video player to cut out middle men, but that gets complicated with 360 video.

Ian: One of the biggest issues I'm seeing at the moment is the limitations with our camera options. The client has specific features he would like implemented, but there's not a defined way to create those features, so we'll likely be making our own software solution for those features. There's a specific issue of taking photos while the live stream is going. In my experience, this not an easy task to do, so there will be issues getting that working properly.

Alan: The main problem is that we have not been able to come up with a full "solution", even for a prototype. We continue running into roadblocks with the technologies we have available and the camera limitations.

TJ: As of now we still do not have a final design for the project. We have been going through multiple approaches to solve the problems we have as a team.

Sam:
- Main problem is finding or coming up with a way to control the camera remotely.
- Finding a way to surmount our limitations in streaming through OBS.
- We still can't fully comprehend the scope of the project, and what exactly our client needs.

Individual Contributions

Name	Individual Contributions	Hours This Week	Total Hours
Nathan Cool		15	50
Zach Newton		5	26
Ian Jamieson	SEE PAST WEEK ACCOMPLISHMENTS	10	35
Alan Negrete		10	31
Tarek (TJ) Yacoub		14	38
Hosam (Sam) Abdeltawab		10	33

Upcoming Plans

Nathan: Over the coming week, I will work with the team in order to ensure that requirements and system architecture issues are ironed out. I will also collaborate with Zach in order to work on a skeleton implementation of our web application.

Zach: Get the main components of the React/Redux web app skeleton done. Setup tests and contact Jess Walters about setting up CI/CD on iastate VMs.

Ian: My main point of focus for this week will be on researching and testing the video and photo modes. Specifically, I will be looking at how we can take photos and video highlights while streaming the video. I will also be looking at how we can remove the "fisheye" distortion of the lens so the zoos can use the camera for marketing purposes.

Alan: Work on researching alternate solutions to the streaming problem. Will focus on testing nodejs github repositories with rtsp support.

TJ: Another design idea that i will go through to solve our issues is to record the videos to a local machine then stream them to the desired platform.

Sam:
- Do more research to see if we could revamp OBS somehow in order to fix our problems.
- More research on other suitable camera candidates.
- Become familiar with NodeJS and ReactJS for web developing and server side development purposes.