EE / CprE / SE 491 – sddec18-12

360 Webcams for Zoos and Aquariums

Week 04 Report: 2018.02.11 - 2018.02.17

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

This week was dedicated to further exploring potential cloud-based service solutions for our system. In particular, we focused on learning more about Amazon's AWS platform and the microservices related to data storage and image/video processing. Additionally, we continued discussing the feasibility of using tools such as FFmpeg to stream directly from the camera to YouTube without the need for a middle man (such as OBS).

Past Week Accomplishments

Nathan: This week was a lighter week, being that our team was focusing a lot on coming to a consensus regarding our architectural component decisions (for system hardware). I looked into AWS services and read specifically about AWS Kinesis and AWS Glacier as potential storage options for archiving and analysis purposes.

Zach: Gained a more significant understanding of Redux and feel comfortable enough to use it in this project with best practices.

Ian: Most of my time has been spent working with AWS and getting a better understanding for our options when it comes to storage, streaming, and animal health monitoring.

Alan: Have been working on getting a prototype to work for AWS Kinesis & other services. It should enable us to stream, store & analyze the data on the fly.

TJ: Initially when we tested streaming softwares such as ffmpeg we had an issue relating to limited bandwidth error. After going through the VIRB documentation again, we noticed that the VIRB does not allow multiple clients to view the stream. As we were testing ffmpeg on the VIRB previously, we had VLC running in the background consuming the stream. Realising our mistake, we set to test the VIRB this time with not other consumer of the stream, and currently ffmpeg works. Therefore I started developing a prototype of one the designs we talked about in one of our previous meetings. The prototype alternates between recording and streaming, initially it records for x amount of minutes then downloads and deletes the footage from the camera, then asynchronously starts streaming that footage to youtube, and repeats the process for as long as the camera is required to work.

Sam:
- Got a better understanding on how to interface the camera with NodeJS.
- Researched better ways to implement the storage of our project (better to save it locally, or online).
- Researched AWS, and getting a better understanding of it.

Recent Group/Client/Advisor Meetings

Date, Time, Location	Participants	Details
2018.02.12, 13:15 - 14:45, Coover 1012	Group + Client	Productive discussion of architecture options + narrowing down of project requirements
2018.02.14, 16:00 - 17:00, Dr. Mitra's Office	Group + Dr. Mitra	Discussed project status and received input from Dr. Mitra.
2018.02.15, 15:30 - 16:30, Coover 3138	Group + Client	Architecture & requirements + demo of TJ's camera-to-YouTube experimentation

Pending Issues

Nathan: As I continue to collaborate with Zach on diving into the design and implementation of the UI component of our system, I am realizing that there are some web languages and tools with which I am either unfamiliar or not proficient. I will have to look into these tools so that I can pull my weight while developing with Zach.

Zach: Rearranging my schedule, commitments, and responsibilities outside of this project in order to be able to contribute more hours and effort.

Ian: Issues with AWS and local storage options. Getting too caught up in the features which won't be implemented until next semester.

Alan: Having problems with setting up the AWS services.

TJ: Currently the prototype has some buffering issues. There is always a gap between downloading the footage from the webcam and starting the stream. Therefore, in the time the live stream would be buffering until the new stream is received.

Sam:
- Working with TJ on the buffering issues for the camera.
- Streaming from the Ricoh Theta camera using a wired connection instead of wifi.

Individual Contributions

Name	Individual Contributions	Hours This Week	Total Hours
Nathan Cool		5	55
Zach Newton		4	30
Ian Jamieson	SEE PAST WEEK ACCOMPLISHMENTS	6	41
Alan Negrete		6	37
Tarek (TJ) Yacoub		8	46
Hosam (Sam) Abdeltawab		6	39

Upcoming Plans

Nathan: Collaborate with Zach to create wireframes/mockups of the UI portion of the system in order to gain feedback from our client (Chris), as well as read up on the web technologies we will be using in our front-end implementation with which I am unfamiliar.

Zach: Create a skeleton app with bare minimum unit tests.

Ian: Will continue working on the backend engineering of the project. Designing and structuring the database.

Alan: Continue working on prototype & get a basic stream & store to s3 application, at least working for normal video files, even if the stream is not live yet with the camera.

TJ: The prototype should be able to perform the recording, downloading/removing footage from webcam, streaming seemingly to give the audience pleasurable experience.

Sam:
- Finish testing the Ricoh Theta connection.
- Learn PHP for better database usage.
- Work with TJ on finding out a solution for the streaming buffer.