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Project: [MediaGoblin] Subtitle Interface along with keyboard hotkeys for video player

Summary

- Building a subtitle interface for the current video player. Popular formats of the subtitles would be supported along with multiple subtitles/captions for a single video. In addition to this, the user will be able to customize the subtitles/captions (If they want to, according to their own convenience).
- Building keyboard hotkeys support for the video player.

Benefits

- Subtitles/Captions for a video are always good for the user to understand a video. Different languages will be supported which will lead to better comprehension and it increases the viewability in sound-sensitive environment.
- Keyboard hotkeys for the video player will improve the user experience for the users

Deliverables

- This project will produce a subtitle interface along with addition customization of the subtitles.
- Feature of keyboard hotkeys for the video player. This will be achieved by making a keyboard hotkeys plugin for video.js first (This is the only way to add features in video.js.) and then use that plugin for mediagoblin.

The following changes will be added to the existing codebase:

- All the CSS files will be added to mediagoblin/static/css

- All the JavaScript files will be added to mediagoblin/static/js
- To include all the CSS and JavaScript files, changes to mediagoblin/templates/mediagoblin/media_displays/video.html
- Additions will be made to mediagoblin/media_types/video/transcoders.py and mediagoblin/video/processing.py (To extract embedded subtitles/captions in the videos).
- During the testing phase, respective tests will be added to mediagoblin/tests/. These tests will be for multiple uploads of subtitles, embedded subtitles and customizing subtitles. Also, do ad-hoc testing (output shown in console) for JavaScript files in the test folder.

Plan

Pre-Project Phase (April 22, 2016 - May 22, 2016) (Community Bonding Period)

- <u>Gstreamer</u> : Learn how to use gstreamer with python and thoroughly go through the code present in transcoders.py and processing.py (mentioned above).
- <u>Plugins for video.js</u>: Learn how to make a plugin for video.js and implement the theater mode for the video player of Mediagoblin as practice.
- <u>Setting up mediagoblin on a server</u> : This will help the mentors to track the progress and suggest changes (if, needed).

Project Phase (May 23, 2016 - June 28, 2016)

- **May 23- June 10 (Coding - Phase 1)**
  - Implementing subtitle upload interface, that will include multiple uploads of subtitles for the same video file.
  - Embedded subtitles/captions will be handled later.
- **June 11 - June 20 (Coding - Phase 2)**
  - Use the <track> element to include the subtitles into the video player
  - Start working on the video.js plugin for keyboard hotkeys .
  - The subtitle player will be fully functional (except the embedded subtitles) for the **Mid Term Evaluations.** As mentioned before, all the changes will be reflected on the server (Will use separate branch for subtitle interface and keyboard hotkeys).
- **July 1 - July 31 (Coding - Phase 3)**

- ○ Complete the video.js plugin for keyboard hotkeys and merge it with the mediagoblin codebase.
- ○ Complete the interface to customize the subtitles and include different language support
- ○ Start working on the extraction of embedded subtitles using gstreamer and make the suitable changes to the subtitle upload interface
- **August 1 - August 15 (Bug fixing,Testing)**
  - ○ Testing of the subtitle customizing interface is required.
  - ○ Make sure the extraction of the embedded subtitles don't affect the quality of the video.
  - ○ Thoroughly testing the code and write the tests for multiple uploads of subtitles, embedded subtitles and customizing subtitles.
- **August 16 - August 24 (Code Submission)**

Communication

- I will be using IRC (Nick: saksham1115) for communication purposes. As I don't have any other commitment during the period of GSoC of 2016, I will always be available on IRC.
- My second preference will be e-mail (saksham115@gmail.com).
- I will setup mediagoblin on a server, where the mentors can keep track of the changes I make and use the features (I proposed in the project).

Qualification

- Why did this project appeal to you?
  - ○ My primary interests are in Web Development using HTML5, JavaScript, Python and this project is a perfect fit for that.
- How will you benefit from it?
  - ○ I think that I will learn a lot about software and particularly open source project development in general if I work on this project. Also, I wish to become a regular open source contributor at GNU Mediagoblin and this seems to a very good way to start.

- Why are you particularly suited to work on this?
  - As a part of my contribution to MediaGoblin, I have worked on the following tickets. References :
    - #5429 Update documentation to reflect changes to mediagoblin.ini (Under review) : https://issues.mediagoblin.org/ticket/5429
    - #5434 Lightbox effect for images (Under review): https://issues.mediagoblin.org/ticket/5434
    - #5443 Theater mode for videos in MediaGoblin (Under review): https://issues.mediagoblin.org/ticket/5443
  - I have a good amount of experience in the technologies (Python, JavaScript, HTML and CSS) required for this project.I have done the following projects:
    - Computer Vision based Automatic Threat Detection System, This project dealt with building a central management server which connects to multiple cameras, CCTV footage, camera feeds process the live camera feed and recognizes people with face detection and recognition technologies, who are present in picture data (Computer Vision) and further optimizing it to the extent it can be done. The Project is made in Django, Python, HTML/CSS and JavaScript. Developed for Imaginate.
    - As a part of a course project in freshman year, developed a game name Reflect available at this link : http://researchweb.iiit.ac.in/~saksham.agrawal/Game/html/animate.html
    - In the sophomore year, I was a summer intern for Cannykart for designing and development of their website. I made their existing site using HTML/CSS, Bootstrap and JavaScript. Link : http://www.cannykart.com/
  - As a part of my old proposal for this project (Implementation of a video player), I implemented a prototype of a video player . Link : http://researchweb.iiit.ac.in/~saksham.agrawal/video_player/

- ○ I was the Teaching Assistant for the course Computer Programming,last semester, so I have fairly good problem solving skills.
- What will you do once the project is "finished"?
  - ○ I would like to become a regular open source contributor at GNU Mediagoblin. Also I would like to add more features to the video player.
- Have you worked on any Free Software before?
  - ○ No, I haven't. This will be the first time.
- Of the skills that you will need to complete the project, which do you already have?
  - ○ I have the required amount of experience in HTML5, CSS, JavaScript and Python. As I mentioned in the above projects, from the past two and a half years I have been actively learning work around of web development.
  - ○ When I made the Computer Vision based Automatic Threat Detection System, it helped me become fluent in Python and learn a web framework like Django and it's advantages.
  - ○ I gained a lot of insight in CSS while working on the web development internship (cannykart.com).
  - ○ Learning JavaScript was the most fun experience as making games and implementing the video player was very interesting.
- What will you need to learn?
  - ○ I will have to learn about gstreamer and its use with python. This will be done by starting of the project. This will be a crucial part for the second half of the project as gstreamer plays an instrumental role in extracting the subtitles.