School of Electronics And Computer Science

ELEC6200 MEng Group Design Project, Group 12

Christopher Baines
Samuel Bennett
Harry Cutts
Christopher Hewett
Maria Lynch

Contents

1 Customer Deliverables

It has been agreed during the weekly customer meeting on 1st December 2014 that the following deliverables shall be produced as part of the final project:

- Videogular Questions: a plugin for adding polls and questions to videos

  - Source code, under the MIT licence

  - An example proof-of-concept website

- Videogular Cuepoints: a plugin which displays informational marks on the scrub bar of a video

  - Source code, under the MIT licence

  - Demonstration of usage in Videogular Questions example site

- Videogular Heatmap: a plugin which displays heat map information on the scrub bar of a video
    - Source code, under the MIT licence

- Videogular Analytics: a plugin for reporting of events within the Videogular player
    - Source code, under the MIT licence
    - An API specification for Videogular Analytics
    - An example site showing basic usage of the analytics data collected from the plugin

- Authoring tool: a Web application to produce the JavaScript file to be used with Videogular Questions
    - Source code, under the MIT licence

Links to `http://kanga-cb15g11.ecs.soton.ac.uk` will require access to the ECS network. Accessing this website from a lab machine or directly networked computer will work, otherwise the ECS VPN will be required.

2 Videogular Cuepoints

The plugin source code is available to download from our repository located at

`https://github.com/soton-ecs-2014-gdp-12/videogular-cuepoints`

Usage instructions can be found in the README file in that repository, and an example can be found in the Videogular Questions example.

3 Videogular Heatmap

The plugin source code is available to download from our repository located at

`https://github.com/soton-ecs-2014-gdp-12/videogular-heatmap`

Usage instructions can be found in the README file in that repository.

4 Videogular Analytics

The plugin source code is available to download from our repository located at

`https://github.com/soton-ecs-2014-gdp-12/videogular-analytics`

The example analytics back end has been set up as a demo at

`http://kanga-cb15g11.ecs.soton.ac.uk/gdp/analytics`

4.1 Feature Walkthrough

The example that we have written for the Videogular Analytics plugin has a storage and replay facility. You can store a list of events received with a JSON file and replay them later. This allows you to post-process events as needed.

To demonstrate the features of the analytics back end, we have loaded some sample data into the example website.

However, since this is only an example of how you can use the analytics, not a deliverable product, it is not fully featured. Further processing methods could be implemented in the future, but all current features work.

The following demonstration features have been implemented:

- Events Log page
  - The top of the page lists all events received, including the event type, the time received, and the data held by the events.
  - The bottom of the page shows the sections of the video that each user has watched. The Unique User Identifier (UUID) is used to show different users, but does not identify a user in any way.
- Per user statistics
  - The watched video segments are processed to show how much of the video each user has viewed.
  - The data is also processed to show which how many times each segment has been watched. There is a known bug with Videogular reporting odd times, causing this statistic to display incorrectly. We have been investigating this, but the data demonstrates a processing possibility. This is the numerical form of the data displayed using the heatmap.
- Results page
  - This shows the results of each question, and the correct answer where possible.
- Results Correlation
  - The "% watched by correct answers" and "Time watched by correct answers" graphs show two ways you could represent the data in a different way.
  - Both of these examples use random data but the majority of the code for producing the graphs has been written. We have abstracted the scatter graph creation code so that arbitrary data sets can be given to the scatter plots.

4.2 Analytics emitted events

The Videogular Analytics plugin emits a number of events which can be sent to a Web server for collection. The table below describes these events.

The plugin is designed so that events can easily be added by sending events to the 'analytics' channel. These are automatically collected and prepared for sending to the given Web server.

Event name	Emitted when	Expected Payload
show_question	a question is shown to the user	All of the associated question data
end_question	the annotation being shown has finished	None
show_results	there are results that will be shown	The results data being shown
submitted_question	the user submits a question	The chosen question response
skipped_question	the user skips a question	None
continue_question	a results page is closed by pressing the continue button	None
play	the video starts to play	The time the video plays from
pause	the video is paused	The time the video pauses at
stop	the video is stopped	The time the video was stopped at

5   Authoring tool

The plugin source code is available to download from our repository located at

`https://github.com/soton-ecs-2014-gdp-12/authoring-tool`

The authoring tool has been set up as a demo at

`http://kanga-cb15g11.ecs.soton.ac.uk/gdp/authoring-tool`

5.1   Features

The authoring tool is being delivered as a working prototype and allows you to create a JavaScript file for the Videogular Questions plugin.

Videogular Questions provides a preview of the questions being created. There will be minor display changes when going from the authoring tool to a working example as the user may style the questions freely.

Pressing Export will provide you with a JavaScript file which can be used. Pressing Preview will reset the video back to the start, load the questions into the preview, and begin playing.

All 5 question types are implemented and, as suggested, the Single choice question (with radio buttons) is merged with the Multiple choice question. If you create a Multiple choice question with one correct answer and allow the user to select a minimum and maximum of 1 answer a Single choice question will be generated.

For demonstration purposes, the authoring tool has been set up with the Caesar Cipher example. Once Videogular's YouTube plugin has been fixed for the current version this will be easier to modify, however this was agreed not to be a priority for our project.

It is possible to generate a number of JavaScript files which produce invalid or odd questions, such as a rating question with a minimum of 0 and a maximum of 0. To more easily allow further improvements to the authoring tool, it has been decided that we shall not limit what the user can create.

In the future, the tool could be made 'safe' so that no user can create an invalid question. However, leaving the user to create a quiz precisely how they wish, not limiting the large number of options, allows them much more power.

5.2   Full Feature Walkthrough

We have designed a number of tests for the authoring tool. Below is the process we have been going through to ensure that the functionality works as expected. After each step the preview button is pressed to confirm that the JavaScript file is correct, and the JavaScript file is validated by checking it manually.

- A question set is added at a specific time.

- A single question is added, then tested to ensure it appears.

- Each question type is tested along with common options.

- Skipping is tested for one question.

- Recording responses and viewing them is tested for one question.

- The interface is reloaded, then a number of question sets and random questions are created and tested, ensuring that they appear at the correct times.

6   Videogular Questions

The plugin source code is available to download from our repository located at

`https://github.com/soton-ecs-2014-gdp-12/videogular-questions`

An example site can be found at

`http://kanga-cb15g11.ecs.soton.ac.uk/gdp/examples/#/simple-example`

6.1   Features

- Single Question provides radio buttons to select at most one answer.

- Question Multiple provides checkboxes to select one or more results. The min/max values should be shown and Submit should be disabled if these requirements are not met.

- Questions Star should allow you to click on the stars and select one rating. The Min/Max values should be shown and Submit should be disabled if these requirements are not met.

- Questions Text should allow you to enter a textual value before submitting.

- Question Range should present a slider which allows you to choose a range of values. The min/max values should be shown on the slider.

6.2 Walkthrough

Each tab should be tested to see the example works.

The tabs Single Question, Question Multiple, Question Stars, Question Text, Question Range all should show one demonstration of the specific question type.

The simple example should show a very basic example, this will be similar to Single Question.

The poll simple example should show an example poll.

Caesar Example is used to demonstrate a number of features being used. This has Videogular Cuepoints enabled so you will be able to see where the questions will be shown. The second question at the end of the example will have a poll so you will be able to see the results of all those who have answered the question.