

YouDanMu Product Backlog

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Problem Statement

YouTube is lacking the popular floating commenting feature, aka Danmaku. Our project is to develop a browser extension to append such feature to YouTube, enabling viewers on YouTube be able to watch Danmaku comments from different sources and also post floating comments on the video.

Background Information

Floating comment (Danmu in Chinese, or Danmaku in Japanese) is a comment system originated in Japan and China and now become popular being used on video-sharing website across Asia. Instead of traditional comment system, it features each comment on the video with a timestamp, and fly through the screen at the designated time, when the viewers are watching the video. It often creates another level of fun or being explanatory to the video. It all depends on how much the viewers participate in the video.

Nowadays, it's not only online video, but also online streaming even cinema has implement this feature. People get to talk about what is going on at that moment and express their thoughts on it. This has been a popular way to interact with the people with same interest.

Environment

Client Side Development

- JavaScript, CSS, HTML for core plugin logic and interface.
- Google Chrome extension API for browser integration.
- WebKit API for DOM manipulation and cross domain HTTP(S)/RESTful requests.
- YouTube video API to inject plugin handlers and event listeners.
- Customized Danmaku module for data XML parsing, generation, and rendering.
- Interface for different Danmaku rendering backends, supports HTML5 canvas, SVG, and HTML/CSS 2D rendering libraries in a fallback fashion. E.g., Mo.js, D3.js etc.
- Gulp.js for extension compiling, hot update on development changes.

Server Side Development

- Go-lang for core backend logic, provides HTTP RESTful API to frontend.
- MySQL for database to store user info, Danmaku, video meta info.

Functional Requirement

Backlog ID	Functional requirement	Hours	Status
1	As user, I would like to use this plug-in in different system and browser.	15	Completed in sprint 1
2	As user, I would like to load Danmaku from different kinds of Danmaku sources (our own server, websites like Bilibili, Nico Nico etc.) using references like URLs, or video IDs.	20	Incomplete: our own server (moved to sprint 2) Completed: integrate Bilibili in sprint 1
3	As user,I would like to post Danmaku in different size.	1	Planned for sprint 2
4	As user,I would like to post Danmaku in different color using a color picker.	5	Planned for sprint 2
5	As user, I would like to post emoji in Danmaku.	1	Planned for sprint 2
6	As user, I would like to post my Danmaku at certain part of the screen (Still at top or bottom; Fly through).	5	Incomplete: moved to sprint 2
7	As user, I would like to switch Danmaku feature on and off.	1	Completed in sprint 1
8	As user, I would like to block/unblock some Danmaku with specific word.	3	Planned for sprint 2
9	As user, I would like to adjust transparency of all the Danmaku.	1	Planned for sprint 2
10	As user, I would like to set the overall font size for all the Danmaku.	3	Planned for sprint 2
11	As user, I would like to change the overall Danmaku border and shadow rendering styles (solid black border, shadowing etc.).	5	Planned for sprint 2
12	As user, I would like to change the overall Danmaku font family.	1	Planned for sprint 2

13	As user, I would like to report some insulting Danmaku	10	Planned for sprint 2
14	As user, I would like to see the whole list of all the Danmaku on the video.	10	Incomplete: moved to sprint 2
15	As user, I would like to change the fly through speed of all the Danmaku.	5	Planned for sprint 2
16	As user, I would like to pause Danmaku with video.	2	Completed in sprint 1
17	As user, I would like to set maximum overlapping Danmaku density when too much floating comments appears.	10	Planned for sprint 2
18	As user, I would like to set synchronization offset for specific Danmaku source in case their timing are out of sync.	5	Planned for sprint 2
19	As user, I would like to automatically save my Danmaku settings for future visits.	10	Planned for sprint 2
20	As user, I would like to automatically apply the “most popular” Danmaku source for a certain video, “verified” by other users.	20	Planned for sprint 2
21	As user, I would like to report mismatch of the “popular” Danmaku source.	20	Planned for sprint 2

1	As developer, I would like to derive a metrics to automatically evaluate “popular” Danmaku sources for a given YouTube video.	20	Planned for sprint 2
2	As developer, I would like to preserve data of the author for each Danmaku comment.	10	Planned for sprint 2
3	As developer, I would like the client software automatically collect exception data when error happens, and send it to me.	20	Planned for sprint 2

Non-Functional Requirement

Security Concerns

Our plugin modifies and provides content on users' web page, thus it's important to make it secure enough to prevent different forms of web application attacks. These includes XSS (cross-site scripting), MITM (man-in-the-middle), AJAX/JS/SQL Injections, CSRF (cross-site request forgery), Insecure Direct Object References, DDoS (distributed denial of service), and etc.

Scalability Concerns

In case our user base might grow in the future, we want to make sure our server is capable of handling significant amount of functional requests in a timely manner. Thus we may need to implement some sort of caching, load balancing and static content generating for CDN acceleration.

Reliability Concerns

Since most of our data providers, such as our Danmaku content sources, YouTube videos, are third party providers. And not surprisingly, in order to use their data, we may need to integrate with their non-public APIs, which may change in the future without any notice. Thus we have deal with these kind of compatibility issues with these interface providers, by constantly checking interface status, and provide patches and updates once they changes. We have to give reasonable explanation to our users when services went down because of the above or any other problems.

Easy Recovery

We want to implement most of the third party data integration on our server side. Thus if any interface changes, we can patch our server only, but still provide constant data and interface to our user clients. In this way, our user don't necessarily need to upgrade their extension to cope with our patches, and most of the integration errors can be resolved on air.

In the same time, we want to provide user friendly interface when services are unaccessible, invalid, or any kind of client side error raised up. It should provide information to the user about how to report bugs to us.

Use Cases

Case	Action	System Response
Post a Danmaku	1. Enter text/emoji in the text input field. 2. Click "position" button to	3. Pop up a window to let user select which part of the screen the Danmaku will be.

	<p>select the position of the Danmaku.</p> <p>4. Click “Character” button to select the font size and color of Danmaku.</p> <p>6. Click “post” button. (Danmaku can be posted without setting the position, font and color, which will be set as default)</p>	<p>5. Pop up a window to let user select size of font(“small”, “medium”, “Large”) and a color picker.</p> <p>5. System record the content of Danmaku and store it in the database.</p> <p>6. Post the Danmaku on video as soon as user start playing the video again.</p>
Switch Danmaku Feature on/off	1.Click the on/off button	2.System would start/stop loading Danmaku
Block Danmaku with specific word	<p>1. Click “Filters” button</p> <p>2. Enter filter word in text input field</p> <p>3. Click the add button</p>	<p>3. Pop up a filter rules interface</p> <p>3. System receive the word and stop rendering Danmaku with that word.</p>
Unblock Danmaku	<p>1.Click “Filters” button</p> <p>2.Select an added rule from the list</p> <p>3. Click the delete button</p>	<p>4. Pop up a filter rules interface</p> <p>5. System delete the filter and resume rendering Danmaku with that filter word.</p>
Adjust the transparency, font size, font family, border, shadow rendering styles, fly through speeds, overlapping density, synchronization offset	<p>1. Click “Setting” button</p> <p>3. Select the option that user want to change.</p>	<p>2. Pop up a window that contains all the setting option</p> <p>4. Record user settings and apply to the player.</p>
Report Insulting Danmaku	<p>1.Click “view all Danmaku”</p> <p>2.Click on a Danmaku.</p> <p>3.Click the “report” button.</p>	<p>4.Pop up the list of all Danmaku</p> <p>5.System will record the report.</p> <p>6.Manually review the Danmaku.</p> <p>7.If the reported Danmaku contains insulting message, it will be deleted.</p>
Change Danmaku sources	1.Select recommended setting or input URL .	2.System will load Danmaku from default setting or given URL.
Report mismatch	<p>1.Select the source you want to report</p> <p>2.Click the “Report” Button.</p>	<p>3.System will record the report.</p> <p>4.System will run algorithm, with report number grows algorithm will lower the rank of the sources.</p>

