

AN ONLINE PLAYLIST MANAGEMENT SYSTEM

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ABSTRACT

This paper presents an online playlist management system designed to provide easy and intuitive management of audio and video playlists. Playlists can be uploaded, combined, downloaded, but also created online and stored for listening. Sharing of playlists is also enabled. State of the art AJAX technologies have been used to developed a fast and intuitive user interface.

I. INTRODUCTION

Online multimedia content has been present for a while and is now emerging as the main source of home entertainment. IPTV, Video on demand and pay-per-view services replace deprecated audio-video technologies. The use of Internet services like YouTube enable easy access to multimedia content, but also provide possibilities for developing additional functionalities based on those services.

Our system enables uploading playlists of multimedia links by users for the purpose of manipulating and combining the lists for later consumption.

Currently there are few similar playlist management systems. We are going to have a review of YTPPlaylist [6] and YouTube Disko [7]. Both of them have a lack of functionalities when it comes to saving the current playlist. The first one has a less intuitive user interface while the second has a great interface but it has a problem with subsequently playing songs from the created playlist. Other sites that were evaluated required registering of the users, which we found very frustrating for the users. Overall, our system has both the functionalities and user interface that other similar systems lacks.

II. SYSTEM ARCHITECTURE

The system is mainly based on JavaScript codes and functions from the jQuery library. JavaScript is mostly used for communicating with the YouTube streaming server. YouTube APIs and Tools [4] enable bringing YouTube experience to user developed third party systems. Using these APIs helps integrate and subsequently play songs from a given playlist in an embedded player. JavaScript function calls can be made to play, pause, seek to a certain time in a video, set the volume, mute the player and other useful functions.

We use Java (Spring Framework) for saving and reusing the playlist one user has made on his local disk. Java gives an explicit specification of the unique timestamp which is generated for each playlist that is requested for downloading. This is used for the assurance that no two different users will download a playlist from the server that they didn't make, the unique timestamp enables us to give the users their playlist for downloading even if they request that in the same time.

jQuery is a JavaScript library used to simplify the process of making a user interface. We use jQuery because of the following:

- It is a cross platform library
- It is easy to use and understand
- Most popular library among the developers
- Open source software
- Requires less coding
- Easy to make AJAX call

jQuery is used for organising the playlist using Drag&Drop from the default jQuery user-interface library. Thanks to the concepts of cross platform code our web layout is consistent, we have tested it on multiple operating systems and multiple web browsers including Google Chrome, Safari, Mozilla Firefox.

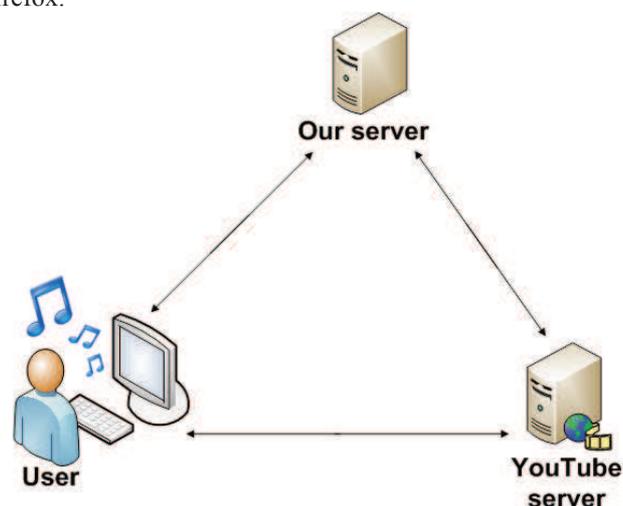


Figure 1: The systems architecture.

III. USER INTERFACE

State of the art AJAX technologies have been used to developed a fast and intuitive user interface. The user interface and it's performance is essential for the system's adoption. We made a research in which we found what users demand for such a multimedia online system.

They demanded several important features:

- Simplicity
- Speed
- Player with familiar interface
- Reusing playlist's
- Manipulating with a given playlist
- Using site without making user account
- Search for songs in categories or by name

The system was developed as a web application without user profiles. When the user opens the page the first thing noticeable are the top 10 videos for the current week. He is

faced with the choice of either using a playlist that he made before from his local drive or make a new one from scratch. If the choice is to make a new playlist, the users can simply Drag&Drop songs into the playlist from:

- The YouTube search integrated on the main page
- Already created playlist from local disk
- Top 10 songs
- Random songs from a given category

As long as the user doesn't clear the playlist or clear the cookies in the browser, the playlist that he made before he left the page will remain there every time he visits the page. The concept of Drag&Drop is quite intuitive, very easy to use and very easy to understand. When the user is done choosing the playlist, he can click play letting the system to play the songs in a row. Before leaving the page or clearing the current playlist, the user can save his current playlist for future use. Part of the user interface is shown on the Figure 1.

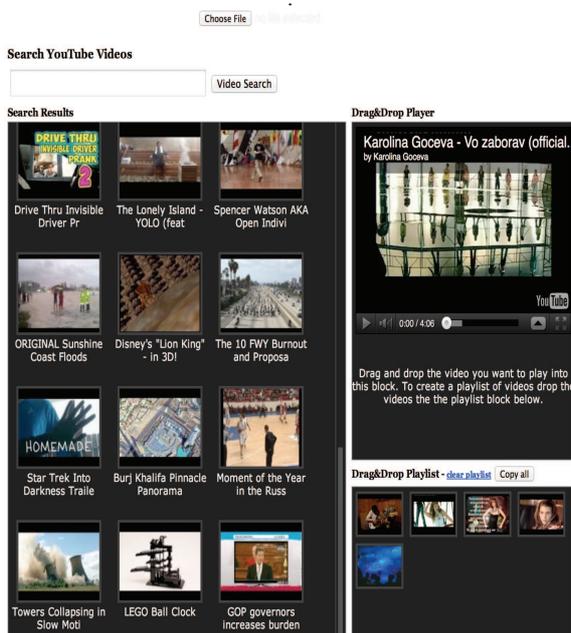


Figure 1: Part of the website's user interface.

IV. EVALUATION

The system was evaluated by its initial group of users. Their opinions were assessed using a questionnaire that consists of 15 questions. Each question was in a form of statement graded by the users with one of the grades: Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree. The overall test user group that responded to the questionnaire contained 25 people. We used Google forms [1] to generate a survey form and retrieve the answers.

The questions in the survey were as follows:

Accessibility

- A1. I can operate the system on a touch screen device
- A2. The font size and style is easy to read

A3. The content is readable if you have a disability regarding your eyesight.

Navigation

- A4. The major parts of the site are directly accessible from the main page
- A5. The site search is easy to access

Layout

- A6. My browser displays all information correctly
- A7. The site has a consistent look and feel
- A8. The expected functionalities are placed in the position I expected
- A9. The labels location and format is consistent

Learning

- A10. Easy to learn manipulation with songs in playlists
- A11. Easy to learn playlists manipulation

Quality

- A12. The web design is good and attractive
- A13. The site is well-structured and correlates to my requirements
- A14. Easy to use
- A15. Positive overall evaluation

The answers given by the users are summarised in Table 1.

Q-n	Strongly Disagree	Disagree	Undecid.	Agree	Strong Agree
A1	3	4	8	5	5
A2	1	2	5	10	7
A3	1	5	12	4	3
A4	0	1	3	6	15
A5	0	1	4	5	15
A6	4	3	4	6	8
A7	5	4	3	7	6
A8	2	5	3	8	7
A9	1	3	5	6	10
A10	1	5	6	10	3
A11	2	2	6	8	7
A12	1	3	6	8	7
A13	3	2	5	9	6
A14	3	2	6	7	7
A15	2	4	6	7	6

Table 1: Evaluation results.

The evaluation results generally show a positive attitude towards the presented system prototype. Figure 2 shows a graphical representation of the answers for the Accessibility and Navigation questions in the poll. The navigation functionality is extremely positively graded since all functionalities are contained within the homepage. The accessibility has a certain number of undecided grades since not all users had the opportunity to test the application on a touch device, nor did they have eyesight problems therefore were unable to give a valid response to the particular question.

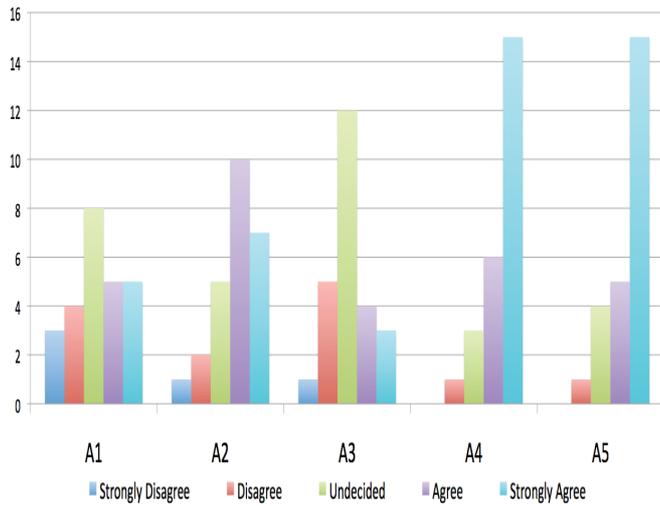


Figure 2: Feedback for the Accessibility and Navigation questions.

The graphical representation in Figure 3 shows the answers on the questions on Layout and Learning. An effort was made to fine tune the interface to be consistent across different most popular browser engines. However, the lack of support by Internet Explorer for new CSS rules, made some small differences in the rendering of the webpage there. As a consequence, the grades on A6 and A7 about the consistency and browser displaying are somewhat divided, although generally positive. The remaining questions had better grades since great attention was paid to the ease of learning and an intuitive interface development.

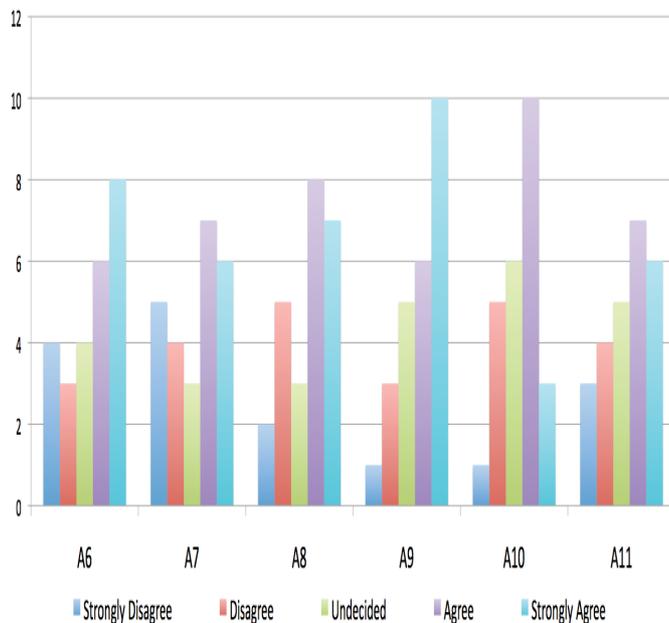


Figure 3: Feedback for Layout and Learning questions..

The final overall evaluation of the system based on the responses on questions A12 – A15 are shown in Figure 4. The majority of users, approximately 50%, in each question gave an agree or strongly agree evaluation. The remaining

undecided users only commented on the incompleteness of the system, while the general idea and progress so far was positively graded

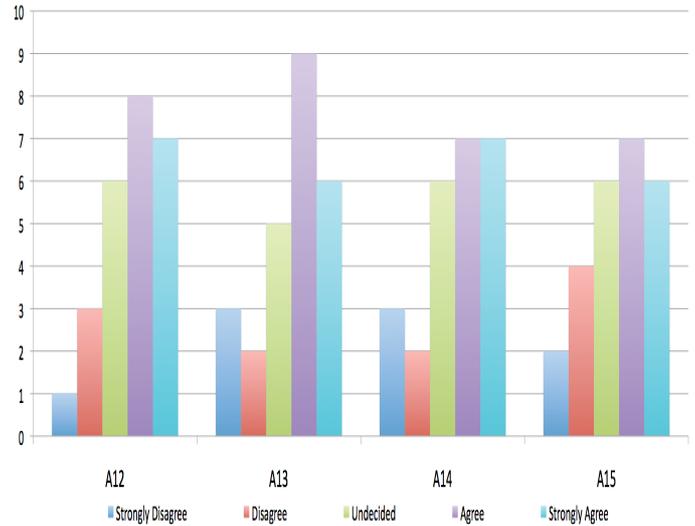


Figure 4: Feedback for Quality questions.

V. CONCLUSION AND FUTURE WORK

The system presented in this paper is aimed at enriching the online user experience. Users can create and store multimedia playlists that can be viewed and enjoyed as well as shared. The attractive user interface and the ease of use are expected to bring multiple users to the system.

The initial user group faced with the system prototype was polled to evaluate their user satisfaction and their opinions regarding the system. A generally positive evaluation was received along with remarks aimed at constructive upgrades and necessary changes. It can be concluded that the initial idea and the first steps have been in the right direction, and there is plenty of room for upgrades and additional features such as playlist generation algorithms [2] or even using Youtube as a teaching tool [3] to be added.

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