



CPSC 6620 Spring 2017
Metube System
Final Project Report

Team G9

Fengwei (Leader)

Yang Cao

{wei8, cao9}@clemson.edu

School of Computing
Clemson University
April 18th, 2017

CONTENT

OVERVIEW

In this project, we developed and tested an online multimedia database system which is called MeTube. It provides an appropriate platform for users to share multimedia files online. As a modified version of YouTube system which can only host video as the media type, Metube system supports more media types, such as graphics objects, video, audio, images, and animation clips. We developed this Metube system through using MySQL and PHP with the web server provided by the School of Computing, and tested it under the latest IE, Firefox and Chrome web browsers on Linux operating system. You can access our Metube system by visiting the following link: <https://people.cs.clemson.edu/~wei8/Demo/public/index.php>.

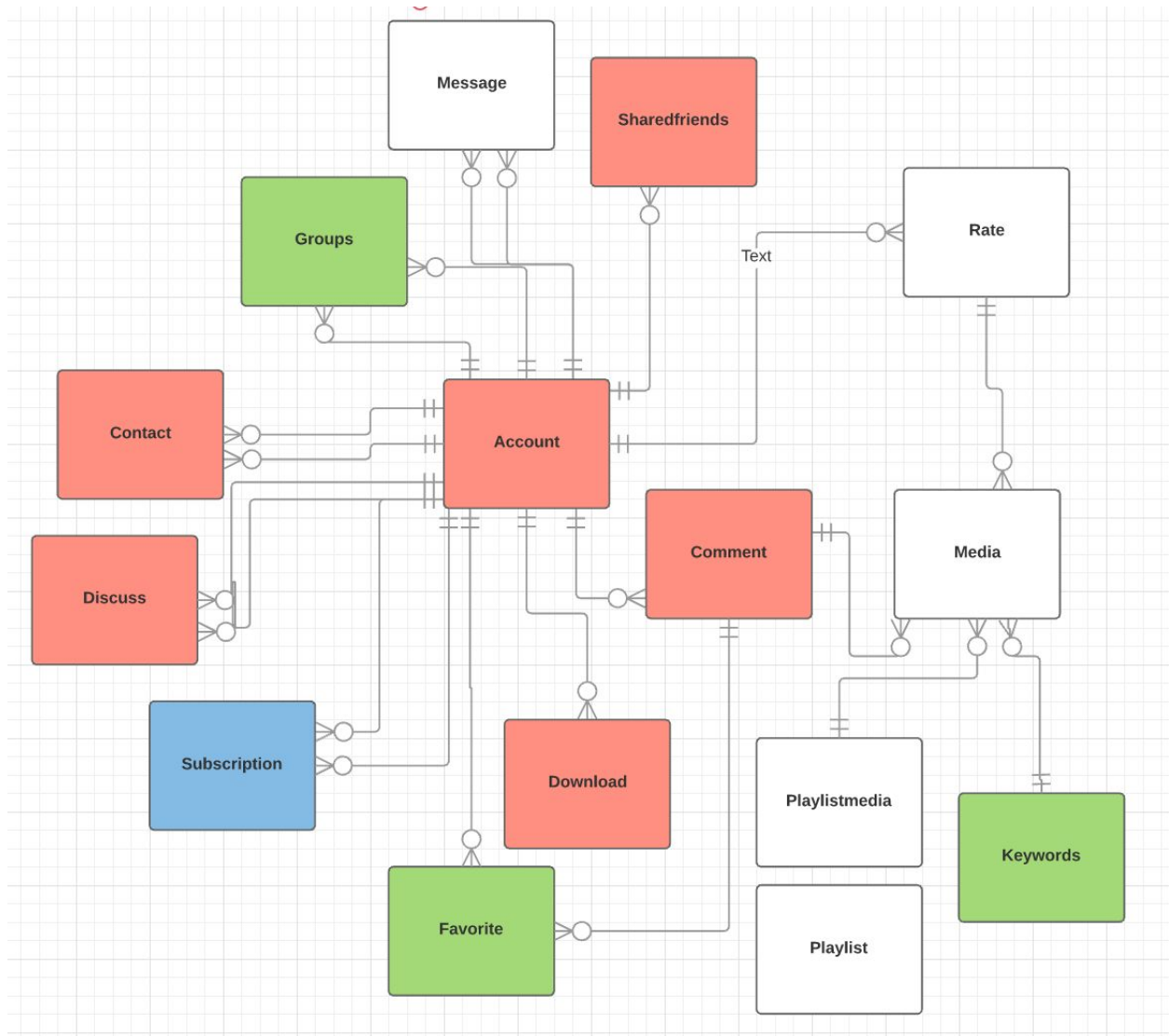
SYSTEM DESIGN

MeTube system provides users with web interfaces that can be used for uploading and downloading multimedia files. All of the multimedia files can also be viewed online through media players which are embedded in the web browsers. In our MeTube system, any user can view multimedia files online by using a web browser. If a user wants to upload or manage the media files, he has to register an account in the MeTube system. When a user uploads a media file, such as video, audio or image, Meta information which includes the title, description and the keywords of this media file are needed in the uploading page. More options are provided in this page where users can specify the authority of sharing the media files with others. For example, they can choose to share with everyone or just friends, if discussion and rating are allowed or not. The Meta information of an uploaded media file can also be changed if the user wants to. When the user does not want to share a media file anymore, he can remove it in his account.

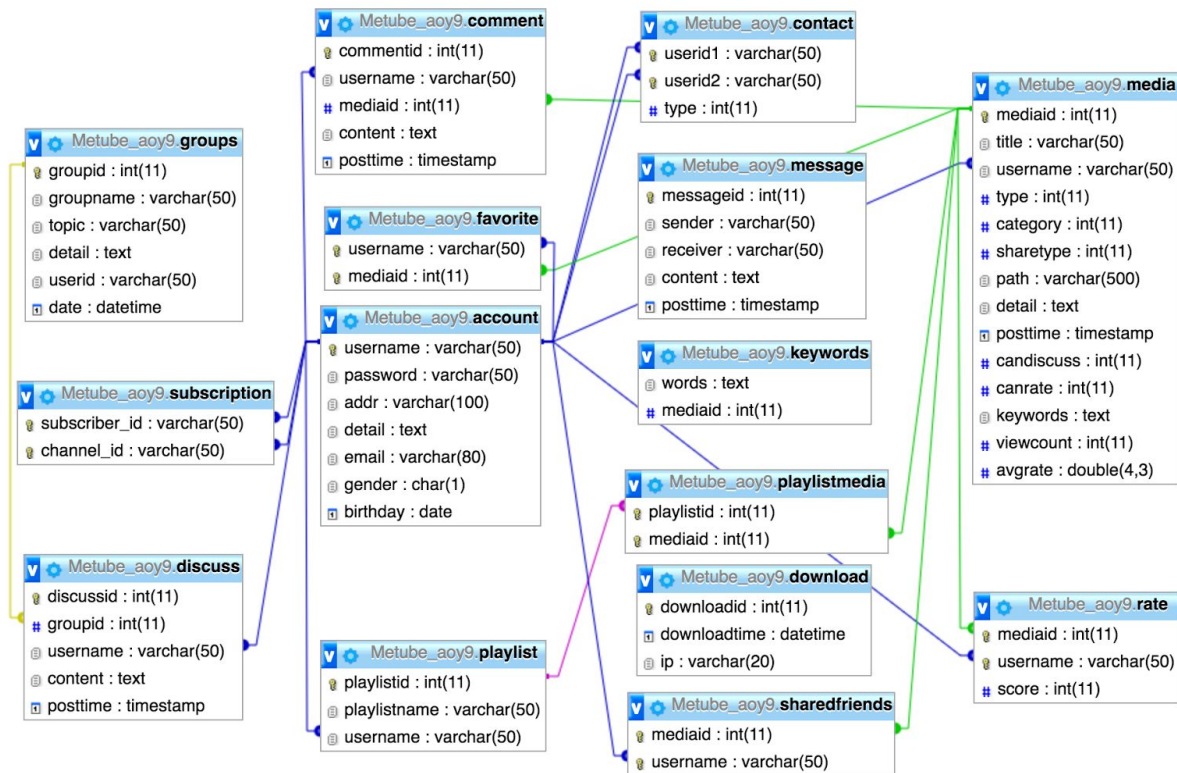
When registered users log into their respective accounts, they can view media files they have uploaded, downloaded, or viewed before. Users can also add the media files they viewed into their playlists where many sublists can be created. All of the media files uploaded by a user can be collected into a broadcasting channel which can be subscribed by other users. Also, a user can create their favorite lists of the media files. If they do not like the media file anymore, they can remove it from this list. In the contact list, the user can add contacts, friends and foes. They can also delete or block their contacts there. The user can block certain friends while uploading the media files so that they can not view or download these media files. Users can discuss or invite their friends to view and download media files using a message system. This message system performs like a web-based email system where users can send, receive, reply, and manage messages. The users can also create or join a group where they can discuss a topic created by a user and add personal comments on the media files.

Any user can search the media files in MeTube system based on keywords or media file features. They can also browse media files by category, uploaded date and file types. Users can rate the media file after they viewed, and the average rating will be displayed on the bottom of the media file cover. They can add the media file into their favorites or playlists, subscribe the owner and download files. The user can also add new comments to a particular media file if the user who uploaded this media file has allowed the media file to be discussed. While a user is viewing a media file, recommendation links of other relevant media files will be listed on the right side of the viewing page.

ER DIAGRAM



DATABASE SCHEMA



FUNCTION DESIGN

User account: A user needs to register for an account to use all MeTube system functions. Basic account functions include registration, signin, and profile update. The advanced features include: (i) contact list management (friend, family, favorite, etc.); (ii) blocking a user in the contact list.

Data sharing: A signed-in user should be able to use a web interface to upload multimedia files into MeTube system. This web interface should allow users to input meta-information about the multimedia file to be uploaded. Any user with a Web browser should be able to download and view media files available in MeTube system through a media player embedded in the web interface. Advanced data sharing features include: (i) setting the sharing methods for media files

that a user uploaded; (ii) blocking certain users from downloading or viewing media files that a user uploaded.

Media organization: All users should be able to browse the media files by categories. Signed-in users should be able to organize their uploaded media files and their interested media files in different ways, including playlists and favorite lists. Advanced features include: (i) showing the most-viewed media files and the most-recently uploaded files; (ii) ordering media files in different ways (such as ordering based on name, size, uploading time, etc.)

User interaction: signed-in users should be able to interact with each other by exchanging messages and commenting on media files. Advanced features include: (i) allowing users to rate media files; (ii) allowing users to form discussion groups and discuss on certain topics related to media files.

Search: The students must implement a YouTube-like search interface to allow users to search media files based on keywords. Advanced features include: (i) displaying a word cloud based on the popularity of the keywords; (ii) recommending related media files to the user who currently views the media files; (iii) searching media files based on low level media features.


IMPLEMENTATION DETAILS

User account: Registration


The visitors can register Metube accounts by clicking the “Register” button.

[MeTube](#) [Image](#) [Video](#) [Audio](#)


Most viewed:



hello
viewed: 39
uploaded at: 2017-04-17



Clemson
viewed: 26
uploaded at: 2017-04-17




Super Mario
viewed: 16
uploaded at: 2017-04-17

The registering page is showed below where a visitor has to type in “username”, “password”, “confirm password”, “email” and “About me” information and submit to complete registration.

[MeTube](#) [Image](#) [Video](#) [Audio](#)

Join Metube To Explore the World




About me

User account: Signin

Users can sign in the Metube system by typing in their username and password information.

[MeTube](#) [Image](#) [Video](#) [Audio](#)

Welcome back




Copyright©2017 © FengWei, YangCao

User account: Profile Update

After signing in personal account, the user can update his profile.

[MeTube](#) [Image](#) [Video](#) [Audio](#) [Group](#)



Alice

My Profile

Alice

Password:

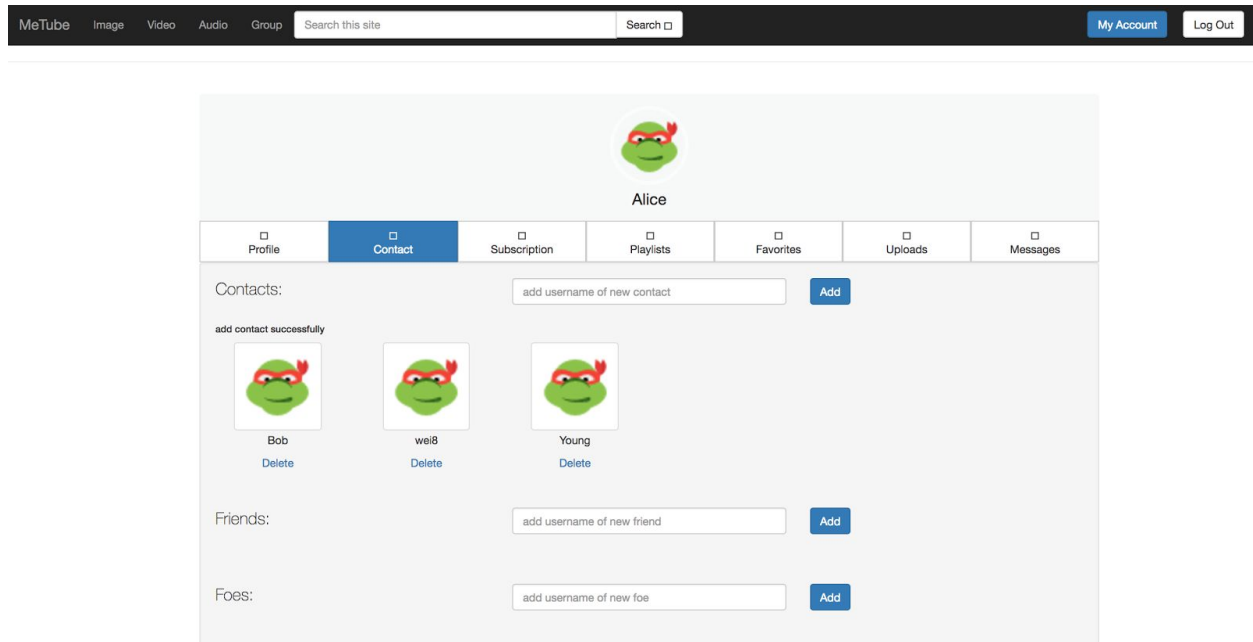
Confirm Password:

Email:

About me:

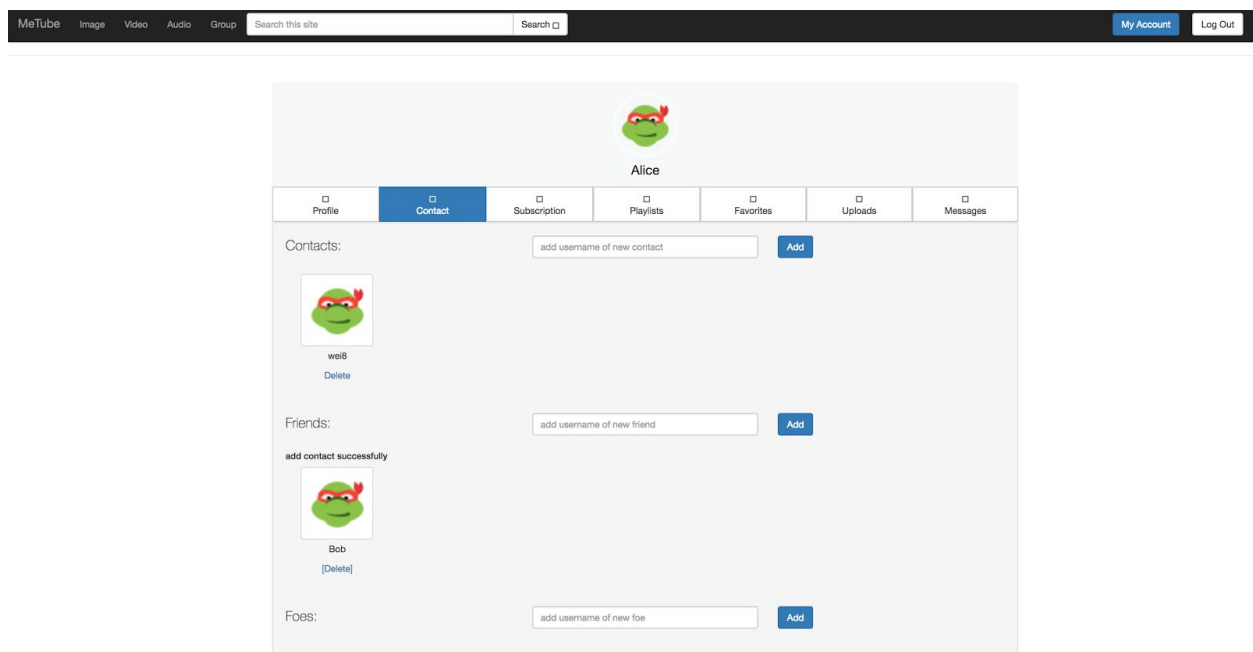
User account: Contact

In the contact page, users can add regular contacts, friends or foes and delete them.

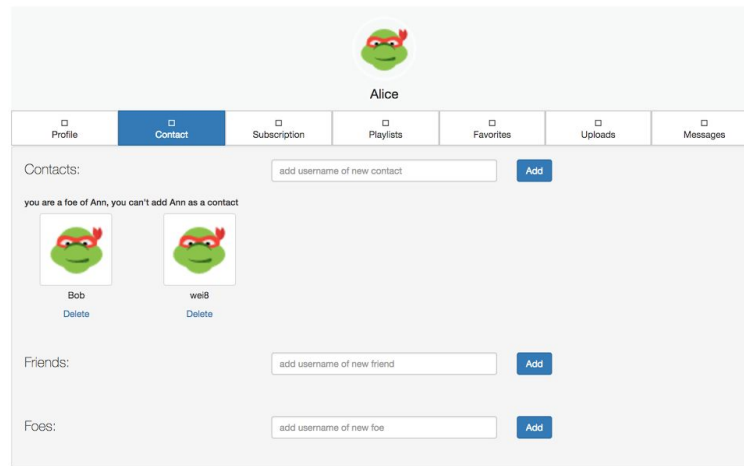


User account: Friend/Foe

Users can add and delete friends and foes in their contact page. Usernames appearing in the foes list means that they are blocked by this user.



The user A can not add another user B who has added A as a foe into the contact list.



Copyright©2017 © FengWei, YangCao

User account: User Blocking

Except adding other users into the foes list, a user can also block certain friends when he uploads a file so that the blocked friends can not view this media file.

block certain friends:

Please type in usernames of your friends that you want to block. Multiple usernames can be separated by comma.

Data sharing: Upload

Users can upload videos, audios and images into the Metube system, and can view or delete these media files in their uploads page.

New Upload:

Add a Media:

type:

☒ video ☐ audio ☐ image

Choose File No file chosen

title:

description:

Category:

Sports

Keywords:

Please type in keywords which can be separated by comma.

sharing:

☐ share to everyone ☒ share to friends only

block certain friends:

Please type in usernames of your friends that you want to block. Multiple usernames can be separated by comma.

Settings:

☒ can be discussed ☒ can be rated

Upload

Data sharing: Meta Data Input

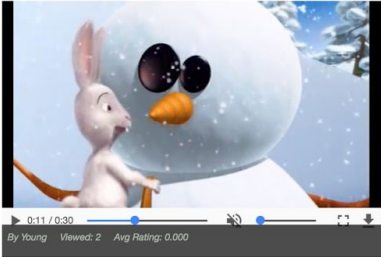
Showed in the above screenshot, meta data such as title, description, category, and keywords are required to upload a media file.

Data sharing: Download/View

Users can download and view the multimedia files online.

[MeTube](#) [Image](#) [Video](#) [Audio](#) [Group](#) [My Account](#) [Log Out](#)

Snowball Greeting Card



0:11 / 0:30
By Young Viewed: 2 Avg Rating: 0.000

Rate: ☐ 1 ☐ 2 ☐ 3


you don't have any playlist. Add one in your account


Add new comment:


Category:entainment


Keywords:

Recommendations:

**hello**
By Alice

**Clemson**
By weil8

**Super Mario**
By Alice

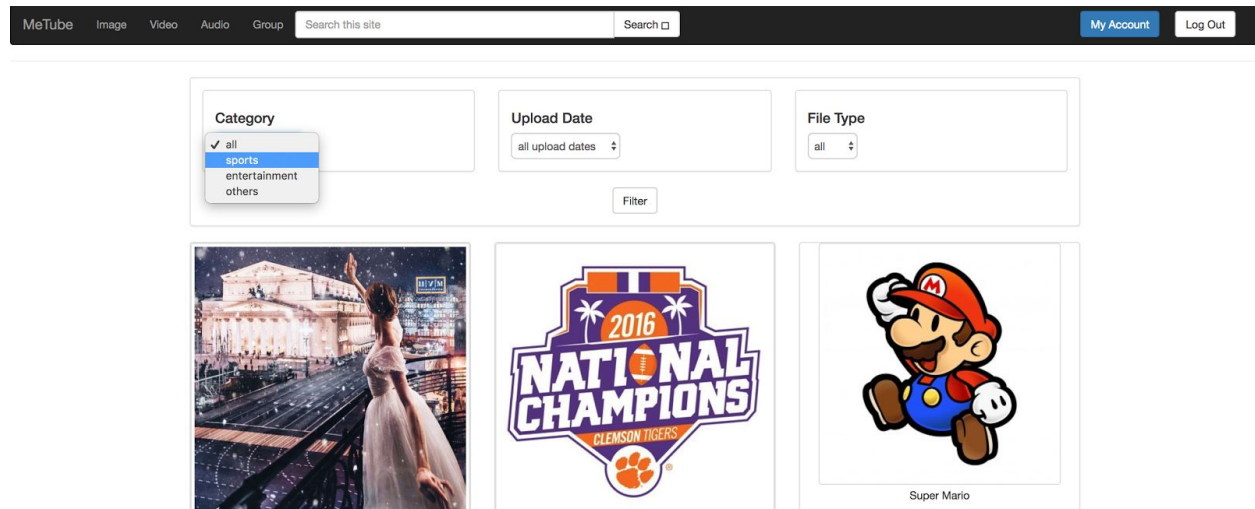
**Pikachu**
By weil8

Data sharing: Media Sharing/Blocking

Users can share and discuss the media files with friends in the messaging system or groups. They can also block the media files by adding some subscribers into foes or in the upload page.

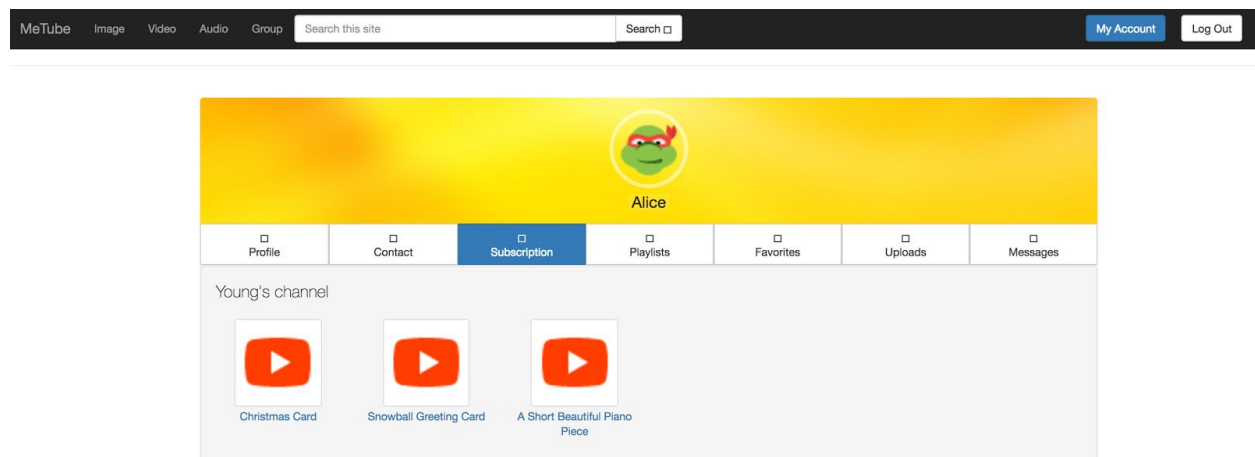
Media organization: Browse by Category

Users can browse the media files by category, classified by file types such as video, audio and image, or classified by sports, entertainment and others.



Media organization: Channel

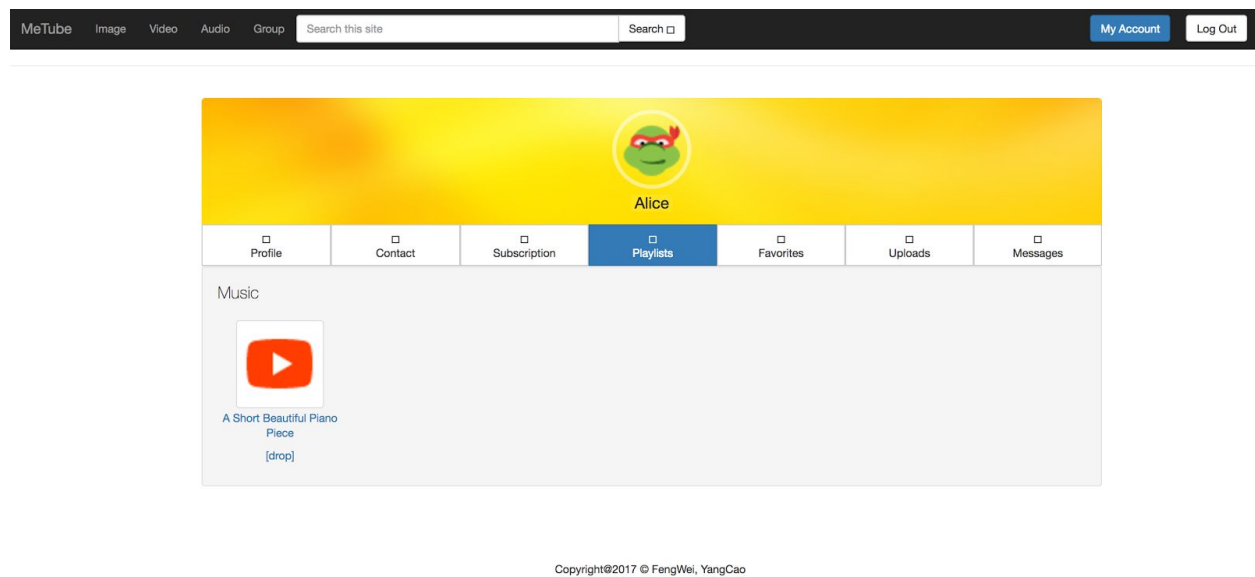
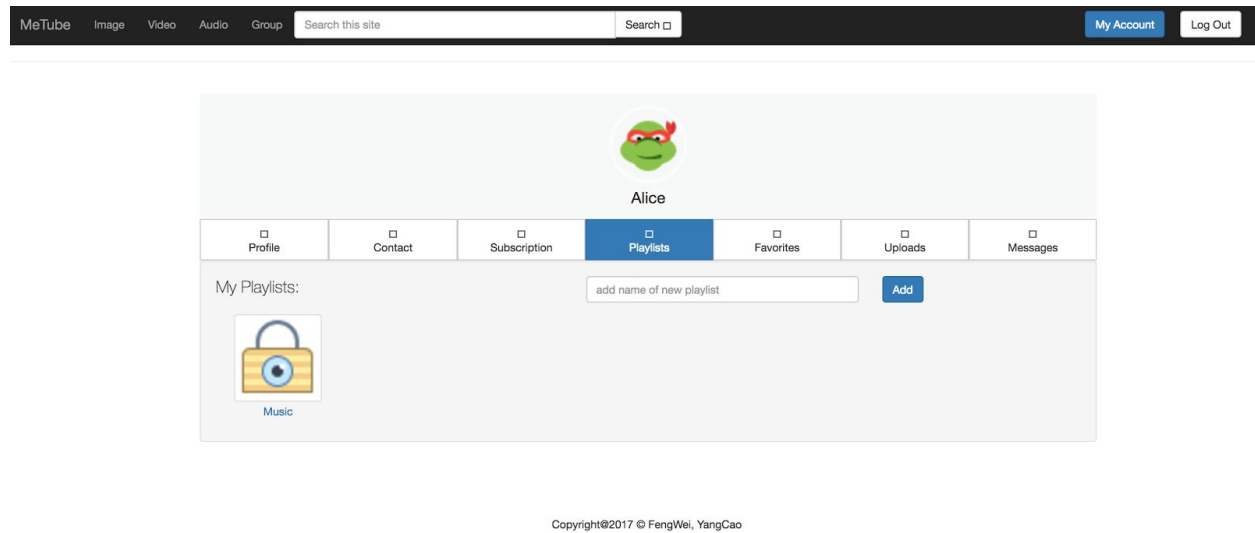
Each user has his own channel once he has uploaded the media files into the Metube system. Other users can view someone's channel by clicking or subscribing this user.



Copyright©2017 © FengWei, YangCao

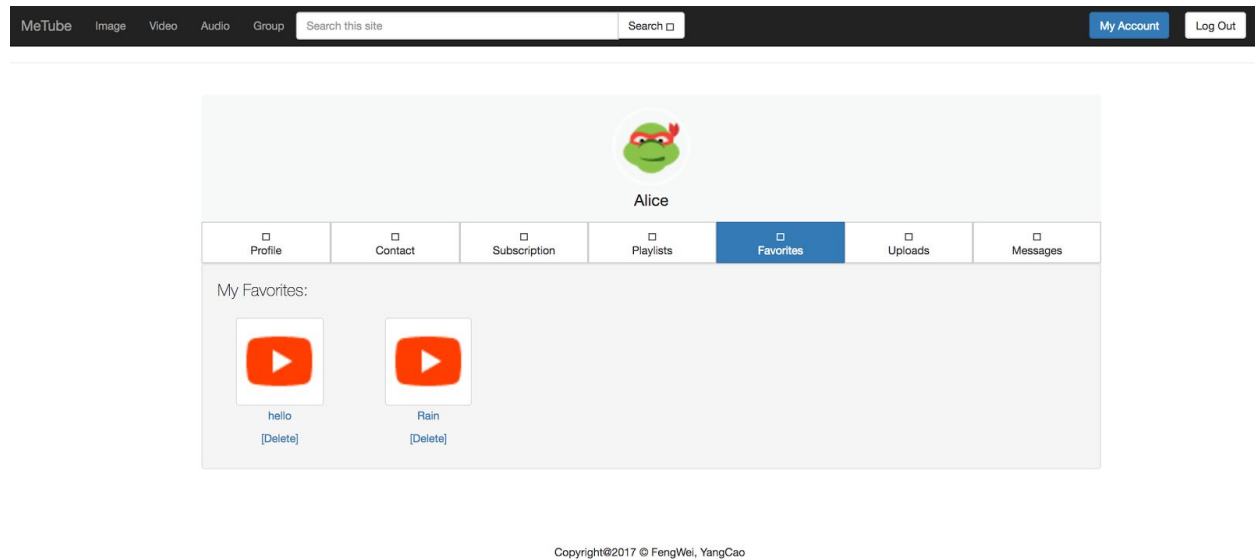
Media organization: Playlists

Users can add new playlists and delete any media files in their playlists.



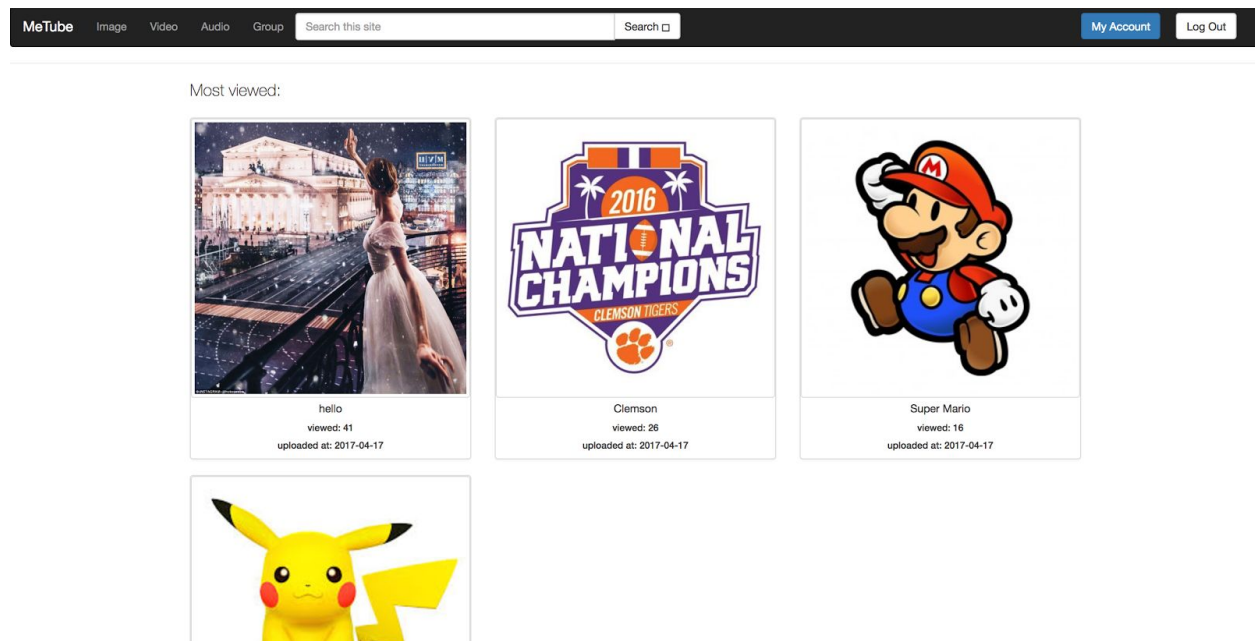
Media organization: Favorite Lists

Users can add the media files they like into the favorite lists when viewing. They can also delete.



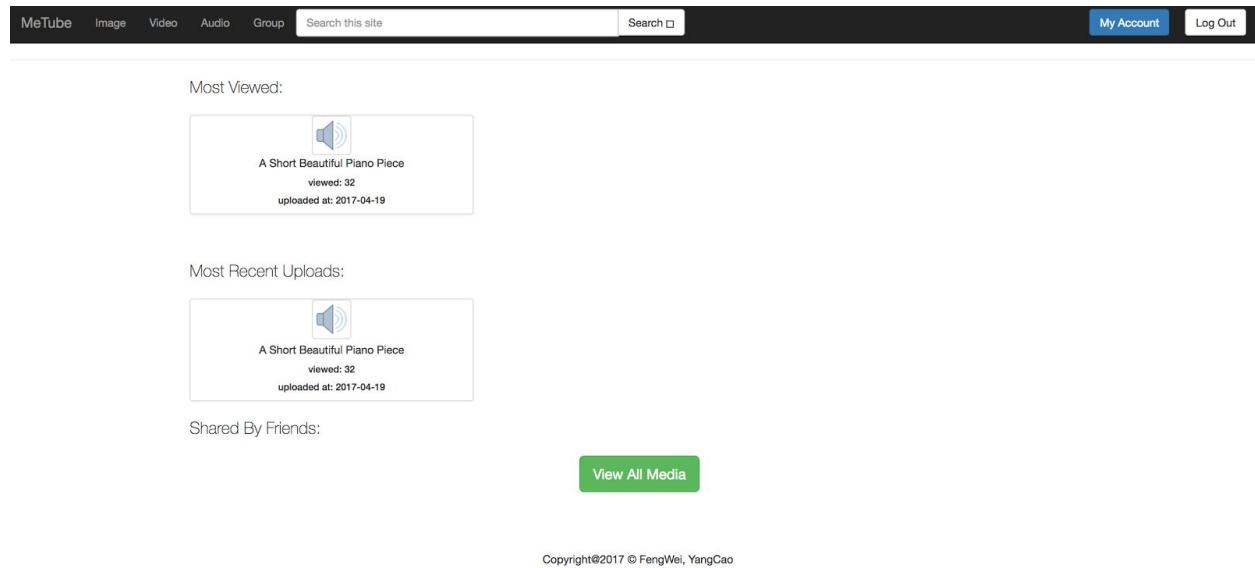
Media organization: Most Viewed

The most viewed unit shows the media files ordered by most viewed time.

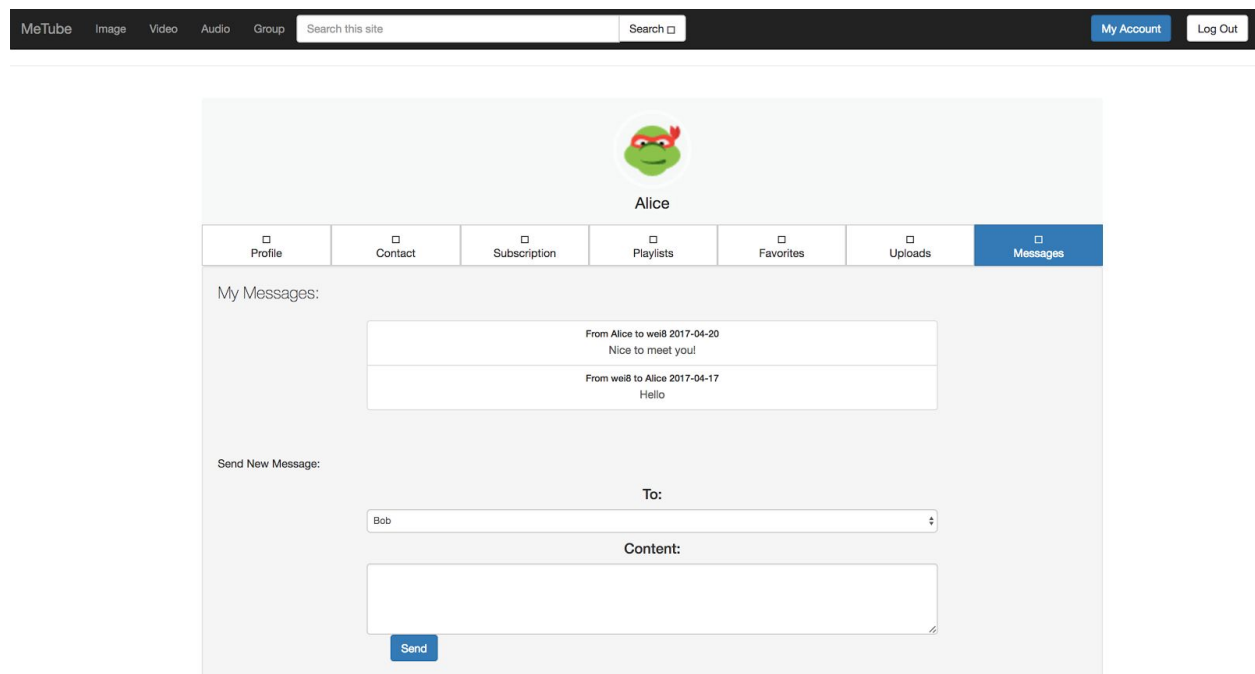


Media organization: Most Recently Uploaded

In each page of classified media files, the most recently uploaded files are ordered by uploading date.



User interaction: Messaging




In Metube system user could send message to each other and the same way receive message. If you don't like some user you can block them, and as result they can't send message to you.

User interaction: Commenting**Add new comment:**

add new comment

Add

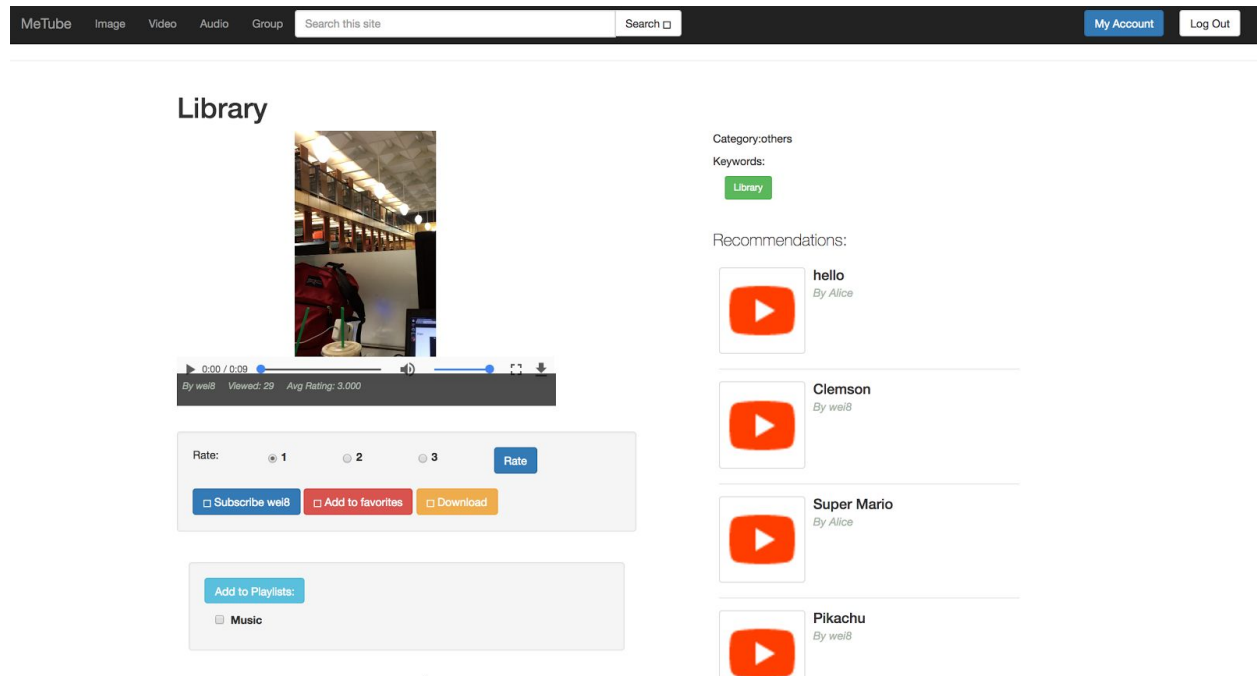


Alice 2017-04-20 [delete](#)

Nice!

When user watch or listen to the media, they can comment the media, all the comments are visible to other users, and they can comment on the same video.

User interaction: Media Rating



After watch or listen the media, user can rate the media, and we could implement a recommendation system based on media rating.

User interaction: Group Discussion

MeTube

Image

Video

Audio

Group

Search this site

Search

My Account

Log Out

MeTube_Team

Computer Science

Join

Football

Sports

Join

Python

Study

Join

Create a new group:

group name

topic

Create

Copyright©2017 © FengWei, YangCao

Every user could create or join a group, use group method users could discuss movies or other topic together.

MeTube

Image

Video

Audio

Group

Search this site

Search

My Account

Log Out

Group: MeTube_Team

Topic: Computer Science

add new comment

Add

,nihao, 2017-04-20

,nihao, 2017-04-20

wei8 dao ci yi you

Alice 2017-04-17

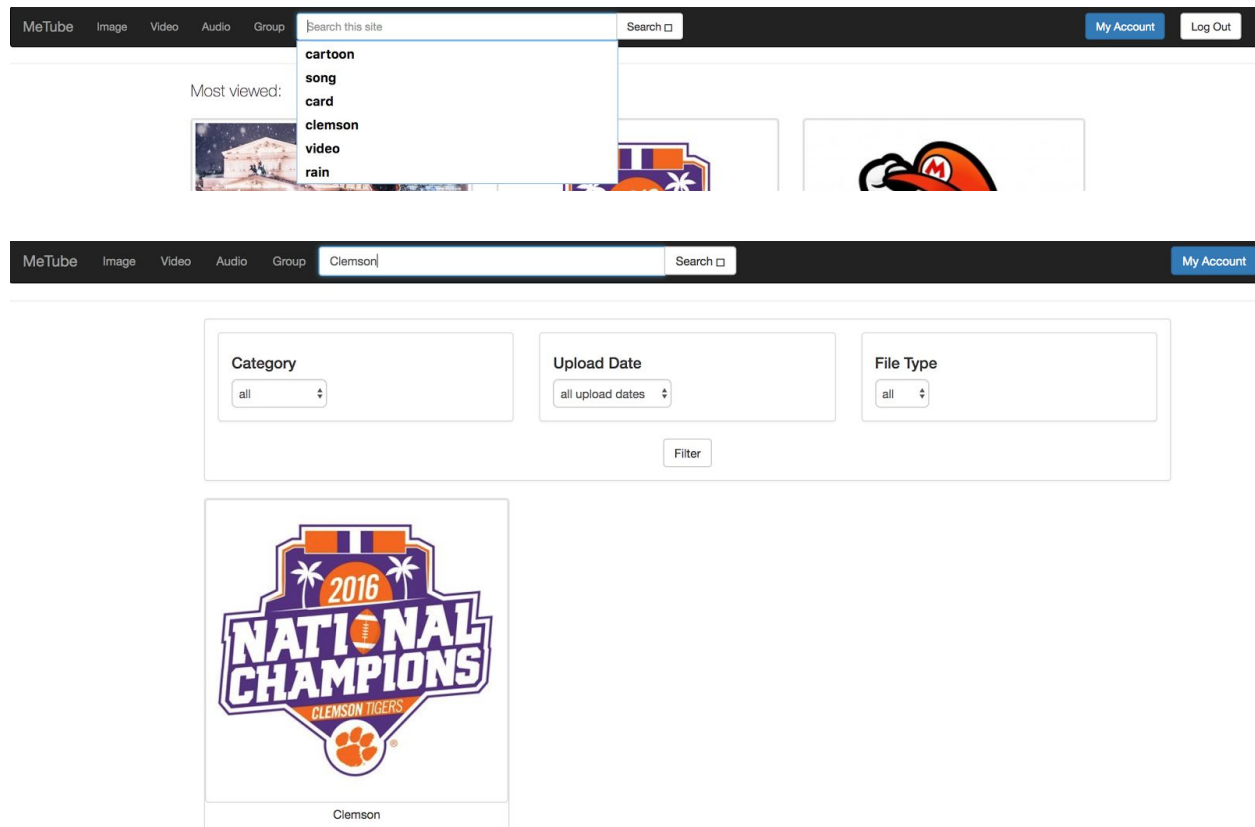
nihao

wei8 2017-04-17

Hello World

After join a group, members could send message to the group talk, and every members in this group will receive this message. So users could talk and discuss together.

Search: Keywords-based Search



When search the media pool, we could use keyword search. That means we could search a bunch of media that share some common characters, such as style and category or other keywords.

Search: Word Cloud

Word Cloud:

bluesky

song

song

Copyright©2017 © FengWei, YangCao

Word cloud is a graph that display word in a beautiful style based on their frequency and other features.

Search: Media Recommendation

Clemson



By wei8 Viewed: 26 Avg Rating: 3.000

Rate: ☒ 1 ☐ 2 ☐ 3

Add to Playlists:

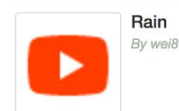
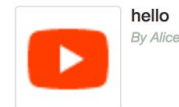
☐ Music

Category:sport

Keywords:

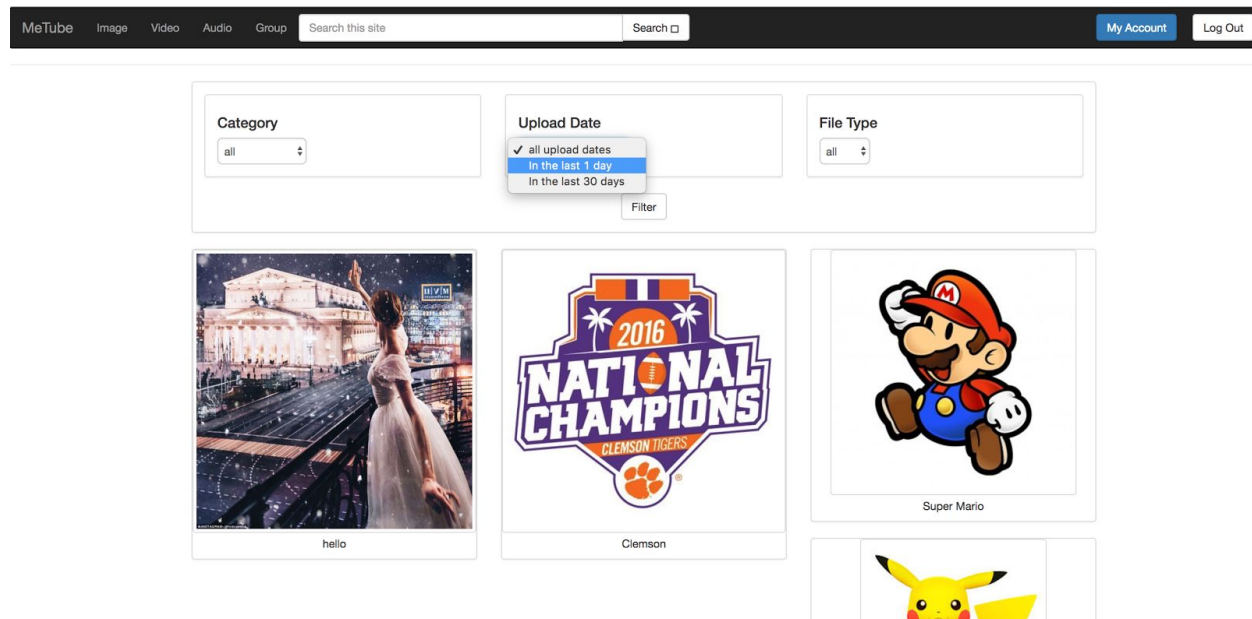
Clemson

Recommendations:



In our Metube system we recommended the most popular media to users, in future we could use a more accurate recommended system to do that.

Search: Feature-based Media Search



Feature based search, In our Metube system user can search media based on media's features, such as media's style and type.

TEST CASES AND RESULTS

All the following test case is tested under a Metube Account.

Case 1:

Visitors can register an account when they exploring Metube website. To register an account user need to specify username password and an valid email address. And password need to be confirmed during registration.

Step

First click "Register" button at homepage (or other page that has a "register" button)

1. Choose a username and set password, password need to be confirmed and email address must valid.

2. If a user has registered successfully, then he could sign in the system, and after sign in the navigation bar will look different from a visitor's version. The register button will not appear on a user's web page instead a logout button will appear.
3. Logout the system and then sign in again. First use a wrong username or wrong password, generally user can not log in with a wrong username or wrong password.
4. Input the correct username and password, then click button sign in.

Result: Passed

Case 2:

Update user's profile or edit personal information, Metube user is allowed to reset their password username and other information. But in order to identify every user, Metube users can not change their user id by themselves, if a user want to change his user id, he need to send email to the admin account.

Step

1. Sign in to user's account then click on button "profile".
2. In user's personal profile page there are several items available to be reseted, password email and personal description.
3. To change user's password, we need to type in a new password and confirm it.
4. After reset password and personal description, user just need to click button "update my profile" to confirm change.
5. If profile changed successfully, there will be a feedback message "success".

Result: Passed

Case 3:

A signed-in user should be able to upload multimedia files into the Metube system. During uploading, the user should be able to input the meta-information about the multimedia file, including the title and description of the media file, and keywords used for searching the media file. Sharing media files: a user can specify how to share the media file with others (for instance, share with everybody or just friends, allow discussion or not, allow rating or not, etc.) A user can delete any media she/he uploads.

Step

1. Use MeTube as a Visitor (Not signed in)
2. Confirm that the “Upload” button does not exist in the navigation
3. Sign in user 1 and Click on “Upload” on the top right corner
4. Confirm that cannot upload without title input, description input and error messages show if there exist errors.
5. Fill out the form to upload a file and select allow discussion or not, allow rating or not.
6. Sign in with user 2 to confirm the discussion and rating work successfully.
7. Sign in with user 1 again and click on “Home” on the top
8. Select any media you uploaded and click on “delete media”
9. Confirm that the media is deleted

Results: Passed

Case 4:

Internet user should be able to view media files available in Metube system through a media

player embedded in the web interface. Blocking user: a user can block other users from viewing/downloading the media files he/she uploaded. A user can also remove the block.

Step

1. Confirm that you are using Metube as visitor
2. Find a media that is shared to public and confirm that visitor can view media files through a media player embedded in the web interface
3. Sign in with user 1 and upload a media. Block user 2 in the “User” section of the navigation
4. Sign in with user 2 and confirm that the media is not allowed to download/view

Results: Passed

Case 5:

All users should be able to browse the media files by categories

Step

1. Click on “Advance” section on the navigation
2. Select the category that you want to view

Results: Passed

Case 6:

All media files uploaded by a user are organized into a broadcasting channel that other users can subscribe to. A user can subscribe to any channel created by another user or cancel a subscription.

Step

1. Click on “User” section on the navigation
2. Click on “subscribe” of the user you want to subscribe

3. Click on “subscribe” section on the navigation and confirm that you can see the channel you subscribe to

Results: Passed

Case 7:

Users can also add media files they want to view. He can add medias to the playlist and remove medias from the playlists.

Step

1. Click on “User” section on the navigation
2. Select a media and click on “add to playlist”
3. Click on “Playlists” section on the navigation and confirm that the media is in the playlist
4. Click on “delete” of the selected media and confirm that it is deleted from the playlist

Results: Passed

Case 8:

Show the most-viewed media files: ranking the medias by the number of times viewed by users.

Show the most-recently uploaded files: ranking the medias by the upload date.

Step

1. Click on “Metube” section on the navigation
2. Select sort by time/rating/view on the right
3. Confirm that the medias are ordered correctly

Results: Passed

Case 9:

Send message: a registered user can send messages to other users and receive messages from others users.

Step

1. Sign in to user 1 and click on “Messages” section of the navigation
2. Click on “Send new message”. Fill in the form of recipient (user 2) and message and click on “send”
3. Click on “Messages” section of the navigation again. Confirm that the message is sent.
4. Sign out and sign in to user 2.
5. Click on “Messages” section of the navigation again. Confirm that the message is received.

Results: Passed

Case 10:

A user can comment a media file if the user who uploaded the media file enabled the discussion option for the media file. He/she can also remove the comment he/she made before.

Step

1. Select a media
2. Fill in the form under the media to submit a comment
3. Confirm that comment is correctly shown for the media
4. Click on “delete” when you want to remove the comment
5. Confirm that the comment is correctly deleted

Results: Passed

Case 11:

Media rating: a user can rate the media file he/she viewed by giving a score.

Step

1. Select a media that is set to be allowed rating
2. Rate the media and confirm that the rating shows correctly

Results: Passed

Case 12:

A user can build a group and join in a group for making discussions. Once a user joins a group, he/she can start a discussion topic or post comments on a discussion topic.

Step

1. Click on “Groups” section on the navigation
2. Build a group by filling the name and clicking on “create group”
3. Confirm that the group is created
4. Join other groups by clicking on “join group”
5. Go in the group and fill in the form to create a new topic
6. Click on a topic and fill in the form to post a new comment
7. Confirm that all the creation and post are correct

Results: Passed

Case 13:

Advance search: Keyword based search and feature based search

Step:

1. Click on “view all media” on the bottom
2. Choose category or upload time or type,
3. Then click on “filter”
4. Confirm that the search shows all the media correctly

Results: Passed

USER MANUAL

Instruction for Visitor

- View and download any videos, audios and images shared to public;
- View comments, uploader name, viewed times and average rating of the media file;
- View word cloud for the popularity of keywords;
- Search the media files based on keywords;
- Search the media files by category, uploaded date or file types;
- Register for a Metube account by clicking the “Register” button on the top right corner of pages. Username, password, email are required to finish registration.
- Log into the Metube account and refer to the instruction for Metube user showing below.

Instruction for Metube User

- Metube user could upload download media that shared to them, and join talk group make friend with others. When watching a media metube user can comment and rate media, they can also follow the users (uploaders) they like. User also allowed to update and edit their profile and block other users.
- Edit personal information, Metube user is allowed to reset their password username and other information. But in order to identify every user, Metube users can not change their use id by themselves, if a user want to change his user id, he need to send email to the admin account.

- Upload and share media with others, Metube user could upload images audios and videos as they like. When uploading the media user could share it to public or certain friends or block some users.
- Commenting on video, when watch a media users could comment it and share ideas with other users. Certainly when commenting user need to obey some rules, such as comment friendly and gentle.
- Add a media to users favorite list, if user like the media they are watching, they could add it to their favorite list, we could recommend related media to users based on their favorite list.
- Follow users or subscription, that means user can follow uploaders, after user follow or subscription the uploader he will see all the uploader's public medias.
- Media rating, Metube users could rate the media they are watching, we can also recommend related media to user based on their rating history.
- Send and reply message, user could send message to each other if they didn't block each other.
- Add friend and block some users, Metube users could block some users and thus these users will never show up in their timeline.