



CS 491

Senior Design Project

Project Specifications Report

Project Name: LikedIt

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1. Introduction

Nowadays, human-computer interactions have been increasing rapidly. This interaction creates new social environments for people to share their lives. “With the advent of mobile applications and social websites such as YouTube, Vine, and Vimeo, we have observed an increase in the number of online videos shared by people expressing. To give you a better idea of how popular these websites are, more than 300 hours of video is uploaded to YouTube every minute.” [1]. The amount of users in these platforms increases attention from companies, clients, and researchers. Creating and influencing people’s experiences has become a valuable differentiation strategy for the owner of videos. Therefore, research data from these platforms are necessary and attractive in today’s world.

The purpose of our Senior Design Project in Bilkent University Department of Computer Engineering is to contribute research about human-computer interaction when people watch online videos. We will capture physiological reactions in real-time to accurately research how humans appreciate. One of the strongest indicators for an understanding of appreciation is the human’s face. The facial expression represents one of the most important non-verbal means of communication.

This application provides a feedback report to the video owner about how much the other users liked or disliked the video scene by scene, where do the users look at in the video mostly, which groups liked their video mostly. The application can be used by every age, gender, ethnic group who watches or records videos. Furthermore, in our application, we recommend videos that users might like in the future based on their reactions to the videos they watched.

In this report, we are going to explain the description of our application, constraints, requirements, professional and ethical issues about our senior project.

1.1 Description

LikedIt is a program that provides watching videos through youtube for users. The advantage of this program is providing reliable feedback for videos. While the user is watching the video the system will examine the face of the user and collect data about appreciation rate. Also, the system follows which sections of the screen the user looks at. After watching, the system will produce feedback about the rate of the user's appreciation and the parts the user most interested in of the video according to data. And this feedback is sent to the owner of the video, also, the viewer of the video will see the data about which scene is reacted most. So, the owner can get more reliable feedback without any need for user intervention. Because of this program, the phrase "Don't forget to click the like button." will be passed. Also, in the program, there is a list of trend videos of the week according to appreciation rate data. Another advantage of LikedIt is recommending new videos to the viewer. The system will recommend to the user according to the like rate during the watching. Normally in other online video platforms, if the viewer watches a video until the end, the system starts to recommend similar videos with the watched one to the user even if the user doesn't like it. In LikedIt, this case will not happen because our system will decide the user's liked rate according to the reaction of the user. So, even if the user watches the video until the end, if he doesn't like it, the system will not recommend videos that are similar to watched one. Therefore, LikedIt provides a more reliable recommendation for viewers. The data about the scene most reacted will be shown to the viewer as an appreciation graphic.

1.2 Constraints

1.2.1 Implementation Constraints

- The version controlling of the project will be done through the usage of Github.
- Object-Oriented Programming (OOP) pattern and coding style will be used.
- We will use hybrid programming.

- The client-side (Android application) of the project will be implemented in Java language using the Android Studio development environment.
- The system that will make the video analysis will be mainly written in Python language. However, some parts of the project might be written in Matlab, C++ and so on.
- To send the recorded video of the user into the server, the smartphone should be connected to the internet.
- Our system will have client-server architecture.
- Our web, mobile applications will be using the same server-side applications.
- We will synchronize the web and mobile application.
- We will use cloud servers for real time processing.
- To train data we will use AWS(Amazon Web Services).
- The system will use third-party libraries like OpenCV, Dlib, Tensorflow and Keras [2, 3, 4, 5].

1.2.2 Economic Constraints

- The usage of github.io domain service will be free.
- The usage of open source libraries will be free.
- Development and testing tools are free.
- We will use free cloud servers.
- Amazon Web Services (AWS) cloud computing service cost ranges from \$0.21 to \$ 0.84, and it depends on hardware specifications of operation devices. Approximate use time is 100 hours, which sums up to around \$210 and Bilkent provide a check for senior students.
- Github provides free student accounts for repositories [6].

1.2.3 Health and Safety Constraints

- For user's eye health, the warning notification will occur for certain frequencies.
- Credentials of the users will not be shared and keep within the secure servers.
- The password of the user will be strong which indicates that it will contain capital letters, non-capital letters, and numbers.

1.2.4 Social Constraints

- The videos can be shared with another user.
- The reports can be shared with another user based on the user's preference.
- The scope of the application is to take reliable feedbacks about videos from users.
- The feedback mechanism will be based on facts about people's appreciations.

1.2.5 Technological Constraints

- The mobile device should be a smartphone with a 2.3.7 API level or higher [7].
- The phone or computer needed to connect to the internet.
- The device should have a reachable camera or webcam.

1.2.6 Language Constraints

- Our application has two language option which is Turkish and English.
- In the future, we planning to add other language options.

1.2.7 Environmental Constraints

- Since our project has no connection with environment, there will be no environmental constraint

1.2.8 Manufacturability Constraints

- Since our project has no connection with manufacture, there will be no manufacturability constraint

1.2.9 Sustainability Constraints

- The application will open to reviews and feedback from the users. The feedback is constantly taken from users.
- The application will be suitable for different platforms.

1.2.10 Data Constraints

- Most of the data will be obtained from internet sources like YouTube, Dailymotion and other video sharing platforms [8,9].
- We are going to collect data and label them.

1.2.11 Using Constraints

- There will be a user manual to show the user how to use the program.
- The usage of applications will be easy to users of all groups can use.
- The owner of videos will be notified when the processing is done and research results are ready.

1.2.12 Ethical Constraints

- We will follow the Code of Ethics outlined by the National Society of Professional Engineers [10].
- We won't share user private data about appreciation with third party establishments.
- Further information can be obtained by section 1.3

1.3 Professional and Ethical Issues

The application will hold data about users' appreciation of the videos. However, it will not hold any video or any photo of the user. So, our system will not violate the privacy of users. Only data to be shared will be the overall appreciation rate, age and country appreciation maps. Therefore, the owner of the video can't access the name of the user who likes the video or not. Personal data about appreciation to the videos with the name of the user used for recommending appropriate videos to the user and not shared with the third parties.

Furthermore, we will inform the users about why we need permission and we ask for their permission for such things as using the camera of the computer or the mobile device. We are also going to provide Terms and Conditions Agreement that the user needs to read before using the system which includes our privacy policy.

Lastly, during the implementation stage of our application, we want to avoid copyright infringement issues by giving priority to open source libraries. On the other hand, if we have to use a library with copyrights, we are going to apply for the licensed version of the software library.

2. Requirements

2.1 Functional Requirements

- The user can create a profile.
- The user can input personal information.
- The program can suggest videos based on user data and previously accumulated data.
- The program can send notifications to the user regarding and events.
- The program can generate reports about the appreciation level of videos and send them to the owner of videos.
- The program can generate reports about which part of the videos gets the attention of the user and send them to the owner of videos.
- The program can show trend videos of the week.
- The user can share the link of videos and appreciation rate results of the videos with their friends.
- The user can select to share their personal data with developers to improve the project. By default, the user doesn't share their personal data.
- The owner of videos should be notified when the processing is done and research results are ready.

2.2 Non-functional Requirements

2.2.1 Security

- The application should not keep the data of the user's face.
- The application should provide security of personal data of the appreciation rate for videos. They should be private to the user.

2.2.2 Usability

- Our user interface will be easy to use for anyone who can use Youtube. The design of the site and mobile application should be easy to understand for them.
- The application should be available to everyone with regard to YouTube's age limitation for specific videos.
- The application should be stable in order to prevent any kind of interruptions.

2.2.3 Cost

- The application should be free of charge for all users.

2.2.4 Performance

- The application should analyze the face of the user in real-time.
- The appreciation rate for application should have high accuracy.

2.2.5 Extendibility

- This application can also be adapted to other platforms such as Netflix, Instagram, Ted Talks and any other platform on the internet that contains videos.

2.2.6 Marketability

- The application provides detailed feedback to the owner of the videos from the viewer's appreciation of data. Which includes an average appreciation rate for each second of video, the appreciation map that defines the average appreciation rate of the users from a specific country, age and gender groups. Therefore, the video uploaders will find it handy to use the LikedIt.

- [illegible]

[11] Figure 1: APPRECIATION & GRATITUDE

3 References

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