Bilkent University

Department of Computer Engineering

Senior Design Project

SEPS

Project Specifications

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1. Introduction

Social Event Photo Sharing

In the contemporary world, there are lots of events maintained by the communities. For example, job meetings, coffee festivals, parties with friends and much more events like them occur at least once a week[1]. The attendants of these events try to catch and share the cheerful and notable moments using their smartphones with continuously improved cameras; the number of photos and videos shared in Instagram daily – the sixth most popular social network[2] – is more than 100 million[3] and 1.2 trillion digital photos were taken by smartphones in 2017[4]. Most of the participants aim to find those memorable and remarkable photos which were taken by their friends, relatives and in bigger events by the people they do not have any acquaintance with to make the experience of the event eternal. Also there are some cases where the attendees reach hundreds or thousands of photos but they are only interested in the photos in which they appear. Although there are several mainly used social networks – some with only photo and video sharing features – there is no comfortable way to share and reach photos for certain events, easily identify the photos where you appear and share the memories only with the people who participated.

1.1 Description

SEPS is the mobile application which creates a comfortable environment for the event organizers and attendants to share and reach the photos of the certain events while securing the privacy of the users.

As each event is conducted in a different place, so making the photos visible to everyone will cause privacy and security problems, in addition there can be problems with spam accounts which publish unrelated photos and make the goal unreachable. To eliminate this problem, SEPS will create unique QR codes for each event - which are created by event organizers - and participants will scan these QR codes from mobile phones.

We have an objective that people who take photos can update our photo database. These photos will be saved and protected in order to provide privacy rights. We aim to make our application use these photos to undergo face recognition techniques by comparing the users' own profile pictures via machine learning algorithms. As a result, the participants will be able to find the photos where they appear instead of searching manually in the large number of photos .

The application's other intent is to notify the users, who had forgotten taking photos of the event, so that users can remember and take captions of the day by using the SEPS. By integrating authenticity and content-sharing environments, SEPS will offer a vast and qualified platform for the users.

For the events which are not registered in the app by organizers and not created a photo sharing environment, the SEPS will have reverse image search functionality; Therefore, the application itself will create an event - from the photos shared under unknown or uncreated event tag - and combine the photos according to certain events using Machine Learning.

1.2 Constraints

1.2.1 Implementation Constraints

- SEPS will be a mobile application.
- Android Studio and Web Server will be used for development.
- Node JS. will be used for server management.
- MongoDB will be used for cloud based database management of the contents.
- Private data of users must be protected.
- Face recognition will be done in python and respective libraries at the back-end.
- Google Location services will be used for location share.
- Google Authenticator will be used for QR event handling.

1.2.2 Economic Constraints

- Server maintenance costs must be lower than 50 USD per 6 months.
- The total license fee should not exceed 50 USD.

1.2.3 Performance Constraints

- The application will be able to verify QR authenticity in real-time.
- The user interface should be updateable upon the requests of the users.
- SEPS would be able to detect photograph authenticity in a considerable short time span.

- The application should be mobile friendly such that it should not crash depending on its hardware usage.
- SEPS must be scalable for possible large amounts of input data.
- The servers should be maintainable such that users will be able to interact with the servers in a very short time.

1.2.4 Reliability Constraints

- SEPS must provide correct results to avoid unwanted results.
- The user interface should not be misleading and contain irrelevant contents.
- The disposition of QR codes should be verified.

1.2.5 Security Constraints

- SEPS must detect photos violating the terms of service.
- SEPS must detect any unusual traffic, or attempt of personal attacks.
- All user data must be protected by professional security systems.
- SEPS should detect disallowed accounts and be able to ban misused accounts.
- The face recognition aspect should be a blackbox such that no human would access or manipulate the data storage.

1.3 Professional and Ethical Issues

- SEPS would respect all orientations and shall be unbiased towards any social identity.
- Maintenance personnel of application must not use and user data for personal use, moreover, it should be guaranteed.

- Attenders of an event must be able to choose the protection level of their data.
- Attenders data mustn't be shared with third parties.

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2. Requirements

2.1 User Friendliness

- System should be user friendly because the target audience is not the technically skilled users.
- User interface should be simple and effective.
- All the technical computations should be done in the background so that users may use them effectively.
- The user interface should not contain any loops or bugs.
- The user interface shall not contain excessive or abusive advertisements.
- The application should be able to handle help requests by the users.
- The interface should offer informative hints to sustain user experience.
- Application’s user interface design may be changed from time to time to modernize experience.

2.2 Safety

- The system should be safe because data privacy is important for users.
- Computations must be held in backward and safe.

- Location services should not be shared with third parties.
- Users having difficulties in logging in to their account should be guided without any security breaks.

2.3 Privacy

- Personal photos must be hidden and not accessible by others.
- Permissions about data privacy must be held.
- The accounts should not be fully accessible from outside of the application.

2.4 Performance

- Computations must be held for the most efficient way so that users may not spend extra time.
- The quality of the contents should be compatible with the according standards.
- Data transfers must be done in a quick manner since it fosters usability and security
- The data transfers should be authenticated and possibility of the loss of data should be minimized.

2.5 Scalability

- Since our project is made for everyday use, available platforms may change as users and technology change

- The program must be scalable and it must hold large quantities of data as user numbers are increased.
- Commercial options can be changeable according to economic changes.

2.6 Reliability

- Reliability is important because our program depends on users and environments.
- Conditions, which can affect the run performance of the application badly will be eliminated.
- Our application will be tested in terms of features.

3. References

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