TED UNIVERSITY

CMPE 491

Senior Design Project I

MESAJLA

Project Specifications Report

25/10/2024

Group Members:

- **Ahmet Tunahan Küçükgökce**
- **Altar Gürsoy**
- **Burak Eren Birinci**
- **Serdar Kemal Topkaya**

1 Introduction

1.1. Description

This projects' main focus is to create a chatting application that provides users a secured chatting experience with enhanced AI support and a secure and safe environment for both parties. With the help of the AI, users can get recommendations from their recent chats in the application. With these suggestions, users are able to communicate much faster and efficient.

Main Parts of Our Project

- Machine Learning and Its' Data: The app saves user's messages as a dataset to feed the ML.
- AI-Based Recommendations: Application provides responses based on the past and current chatting between users.
- Safety and Security: The users' information must be encrypted and not accessible from third parties.

1.2. Constraints

Privacy Constraints

- **Data Storage and Retention:** For AI to give recommendations, the program retains chat histories. There must be an explicit guideline for data deletion with respect to the safe storage methods in the backend.
- **User Control Over Data:** To give users access and control over their data, users should be able to keep or remove their chatting history.
- **Encryption Standards:** The stored data in the app must be securely encrypted during the transfer and afterwards to protect the users.

Social Constraints

- **Cultural Sensitivity:** AI must not give inappropriate messages and recommendations for the sake of preventing misunderstandings and respecting cultural standards of users.
- **Community Safety:** Application must provide a secure environment for all users.

Ethical Constraints

- **Bias in AI Responses:** The responses of the AI must be trained by ML in order to avoid harmful stereotypes. Because of that, the AI must be continuously fed.
- **Transparency and Permission:** Users must be acknowledged about the usage of AI, how the AI generates messages.
- **Ethical Usage of AI:** The AI must support the users without breaking into user's privacy or autonomy.

1.3. Professional and Ethical Issues

In the development of this project, several professional and ethical rules must be followed in order to ensure that the application meets the industry standards, protects user rights, and fit in with ethical guidelines.

- User Consent and Transparency

  Users will receive clear information about how their data is used. This includes being open about data collection practices, the reasons for using the data, and any sharing of data with third parties. Consent forms will be easy to access and easy to understand, and users will have the option to change their consent at any time. It is our duty to make sure that users fully understand the terms and conditions they are agreeing to.

- Ensuring Accessibility and Equal Access

  The application will be developed to be accessible to all users, including those with disabilities. This includes features like easy interface, and readable text sizes. Promoting accessibility supports ethical design principles and professional responsibility, making sure that technology works for everyone, no matter their physical or mental abilities and conditions.

- Responsible Development and Testing

  During the development and testing phases, the project will follow professional standards of software engineering. This includes testing to identify security vulnerabilities, bugs, or performance issues. Regular updates and maintenance will keep the app simple, secure, and working well. Ethical practices will also be followed, making sure no misleading tactics like leaking of user information or hidden fees are used.

- Environmental Impact

  To address ethical concerns about sustainability, the application's impact on the environment will be considered. Efficient coding practices will be used to

lower energy consumption in server operations and data storage. By optimizing resource usage, the project will help reduce the application's environmental impact.

- Machine Learning and Data Analysis

  While developing “Mesajla”, it is necessary to have knowledge of machine learning and data analysis, and to maintain the quality of the application, it is necessary to be aware of the latest technologies of machine learning.

2 Requirements

Functional Requirements

- User Authentication
  - Sign up: Users should be able to create an account using their email address and password.
  - Login: Users must log in to access the interface via their email address and password.
  - Friend Request: Users can send friend requests to other users using their email address to start communicating with them.
  - Changing Password: Users should have an option to change their password to recover their account.
  - Security Question: Users should have an option to create a security question which only the one who sets the question knows the answer for their account security.

- User Profile Management
  - Profile Editing: Users can edit their profiles information (name, profile photo, status).
  - Privacy Settings: Users can control who sees their name, photo and status.
  - Security Settings: Users can manage other accounts they communicate with (block, unblock, delete chat).
  - Friend List: Users can manage their friend list (add, delete) and friend request (accept, decline).

- Messaging Features
  - One-on-One Chat: Users can send and receive text messages in real time with another user.
  - Multimedia Sharing: Users can send images, videos, and documents.
  - Message Status Indicators: Users see the indicators for sent.

- Notifications
    - Notifications: Users receive notifications for new messages.

Non-Functional Requirements

- Performance
    - The application should handle many users at the same time with minimum deceleration.
    - Messages should be delivered between the users in real-time (in a second approximately).
- Security
    - The data of user stored securely, and user privacy-compliant not be violated.
- Usability
    - Simple and practical interface for the user comfort and usage of the program.
- Scalability
    - The application must be capable of scale system to adapt the user growth and message load without any performance degradation.
- Compliance and Regulations
    - Accept and comply with the terms of data protection regulations (GDPR).
    - Take consent of users for collecting and using their data.

3 References

1. *ACM Code of Ethics and Professional Conduct*. (n.d.). Association for Computing Machinery. https://www.acm.org/code-of-ethics
2. Editor, D. (2023, December 14). Code of ethics. IEEE Computer Society. https://www.computer.org/education/code-of-ethics