



TRIBHUVAN UNIVERSITY
FACULTY OF HUMANITIES AND SOCIAL SCIENCES
LALITPUR ENGINEERING COLLEGE

TRUELENS: FAKE NEWS DETECTOR

BY

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A PROJECT PROPOSAL

SUBMITTED TO THE DEPARTMENT OF COMPUTER APPLICATION

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE DEGREE OF BACHELORS IN COMPUTER APPLICATION**

DEPARTMENT OF COMPUTER APPLICATION

LALITPUR, NEPAL

JUNE, 2024



Tribhuvan University
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Under the Supervision of
Er. Bibat Thokar

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I declare that the work hereby submitted for Bachelors in Computer Application at the Department of Computer Application , Lalitpur Engineering College entitled **”TrueLens: Fake News Detector”** is my own work and has not been previously submitted by me at any university for any academic award. I authorize the Department of Computer Application , Lalitpur Engineering College to lend this project work to other institutions or individuals for the purpose of scholarly research.

Sirjan Shrestha (LEC077BCA06)

June, 2024

RECOMMENDATION

The undersigned certify that they have read and recommend to the Department of Computer Application for acceptance, a project work entitled “**TrueLens: Fake News Detector**”, submitted by **Sirjan Shrestha (LEC077BCA06)** in partial fulfillment of the requirement for the award of the degree of “**Bachelors in Computer Application**”.

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DEPARTMENTAL ACCEPTANCE

The project work entitled “**TrueLens: Fake News Detector**”, submitted by **Sirjan Shrestha (LEC077BCA06)** in partial fulfillment of the requirement for the award of the degree of “**Bachelors of Computer Application**” has been accepted as a genuine record of work independently carried out by the student in the department.

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ABSTRACT

In an age where misinformation proliferates rapidly across digital platforms, discerning the credibility of news is crucial. This project, "TrueLens: A Fake News Detection System," addresses this challenge by leveraging advanced machine learning techniques integrated with user-friendly web technologies. The backend is developed using Python and Django with the Django Rest Framework (DRF), facilitating robust API management and data handling, while the machine learning model, powered by TensorFlow, employs sophisticated natural language processing (NLP) to analyze and classify news articles. The frontend, also developed with Django, provides an intuitive interface for users to input or paste news content for verification, and the system's data is efficiently managed with PostgreSQL. The project uses Git and GitHub for version control, ensuring seamless collaboration and continuous integration. TrueLens not only detects fake news but also serves as an educational tool, enhancing users' understanding of misinformation patterns and fostering critical evaluation skills. By making powerful AI accessible through a web interface, TrueLens contributes significantly to the fight against misinformation, offering a practical solution for individuals and organizations committed to maintaining the integrity of information in the digital age.

Keywords: *Fake News, Machine Learning, Natural Language Processing (NLP)*

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LIST OF ABBREVIATIONS

ACID	Atomicity, Consistency, Isolation, Durability
BSD	Berkeley Software Distribution
CMS	Content Management System
CV	Curriculum Vitae
CSS	Cascading Style Sheets
DFD	Data Flow Diagram
DOM	Document Object Model
ER	Entity-Relationship
HTML	Hypertext Markup Language
IT	Information Technology
JS	JavaScript
MySQL	My Structured Query Language
OS	Operating System
PHP	Hypertext Preprocessor
SQL	Structured Query Language
UI	User Interface
UML	Unified Modeling Language
URL	Uniform Resource Locator
UX	User Experience

1 INTRODUCTION

1.1 Introduction

In today's digital era, the rapid spread of fake news poses a serious threat to public trust and societal well-being. TrueLens: Fake News Detection System offers a practical solution by using advanced machine learning techniques to identify and flag misleading information. Powered by Python and TensorFlow, TrueLens integrates seamlessly with Django to provide a user-friendly interface where individuals can verify the authenticity of news articles. With efficient data management via PostgreSQL and robust version control through GitHub, TrueLens stands as a crucial tool in the fight against misinformation, promoting informed decision-making and enhancing the integrity of online content.

1.2 Problem Statement

In the digital age, the rampant spread of fake news undermines public trust and distorts reality. The volume and sophistication of misinformation on digital platforms make it difficult for individuals to discern fact from fiction. Traditional verification methods are often inadequate, leading to widespread misinformation with significant societal and political impacts. There is a lack of effective, user-friendly tools for quick and accurate news verification, which exacerbates the issue.

Additionally, there is a significant educational gap, with many users unaware of how to critically evaluate fake news. Current solutions either lack real-time detection capabilities or are too complex for general use. This highlights the need for a robust system that not only detects fake news using advanced machine learning but also educates users about misinformation. TrueLens aims to fill this gap by providing an accessible, efficient, and educational platform that empowers users to combat false information and make informed decisions.

1.3 Objectives

- To empower users with a user-friendly tool for swiftly and accurately verifying news authenticity, thereby combating the spread of misinformation effectively.

1.4 Scope

- Implement advanced machine learning algorithms to accurately detect and classify fake news articles based on linguistic and statistical analysis.
- Develop a user-friendly web interface that allows users to easily submit news articles for verification and receive clear, understandable results regarding their authenticity.
- Provide educational resources within the platform to enhance users' understanding of fake news, promoting critical thinking and media literacy skills among the general public.

1.5 Report Organisation

The material in this project report is organised into seven chapters. After this introductory chapter introduces the problem topic this research tries to address, chapter 2 contains the literature review of vital and relevant publications, pointing toward a notable research gap. Chapter 3 describes the methodology for the implementation of this project. Chapter 4 provides an overview of what has been accomplished. Chapter 5 contains some crucial discussions on the used model and methods. Chapter 6 mentions pathways for future research direction for the same problem or in the same domain. Chapter 7 concludes the project shortly, mentioning the accomplishment and comparing it with the main objectives.

2 BACKGROUND AND LITERATURE REVIEW

2.1 Background Study

We are looking for designs that make our system visually appealing and at the same time have better performance. As this system is mainly for creatives who can share their journey, we need to implement a profile system that shows off their portfolio and resume. Showcasing their skills should be easy so this system mainly focuses on functionalities implementations. We are looking for different tools and techniques for achieving those goals. We are also studying papers, articles, and related books for our project. We are also learning about implementation about messaging system. The proposed project is to create an app for creative professionals where they can share their discussions, projects, skills, and perform messaging functions. To develop this app, it is important to understand code collaboration, tools for code sharing, and messaging functions.

2.2 Limitation

- Graphics are planned to be designed by myself can reduce in quality and become time consuming.
- We cannot message through our system directly.

2.3 Literature Review

Social networks are like groups of people who know each other and interact with each other. The technology helps us study how people are connected to each other and how they talk to each other online. It also helps us understand the things they say and the information they share.[1]

In today's competitive job market, organizations strive to identify and attract top talent, and this research investigates the influence of social media on the recruitment process. With the rapid growth of social media usage, it is crucial for organizations to understand effective strategies for attracting the best candidates. The study involved 12 recruiters from various industries, and the findings reveal heavy reliance

on platforms like LinkedIn for recruitment purposes. However, the use of Twitter and Facebook for recruitment is comparatively lower. Recruiters need a focused approach when utilizing social media to manage the potential overwhelming volume of work. It is evident that recruiters cannot effectively conduct recruitment activities without leveraging social media tools, but proper training in optimizing social media usage is essential. This study contributes to highlighting the significant impact of LinkedIn on recruitment processes, while also emphasizing that social media is not a one-size-fits-all solution for recruitment challenges.[2]

In Stack Overflow, A complete profile includes details such as a website URL, location, about me section, profile image, and age. Our analysis revealed that most users do not have a complete profile. However, users with complete profiles tend to have higher reputation scores and provide better quality question and answer posts compared to users with incomplete profiles. This suggests that having a complete profile is beneficial for contributing effectively to the network. Among the profile elements we examined, location and about me have a stronger relationship with user activity and contribution. This research helps us understand which profile elements are important in a Q and A social network and which ones should be prioritized for users to fill out regularly.[3]

We examine the characteristics of developers involved in Open Source software creation to understand what factors contribute to innovation within the Open Source community. The analysis reveals that having a higher reputation within the community increases the likelihood of attracting collaborators, although developers are also motivated by reciprocity, aligning with the principles of a gift economy. Additionally, we find a significant network effect resulting from standardization, indicating that developers who use popular programming languages in their projects are more likely to collaborate with others. Furthermore, providing additional information, such as a valid URL to the developer's homepage, increases the chances of finding coworkers. These findings can be applied to the broader population of experienced users on

platforms like GitHub.[4]

GitHub has recently introduced a new feature called Discussions, which serves as a platform for developers to ask questions and engage in broader discussions that go beyond specific Issues. Before its widespread availability in December 2020, Discussions underwent testing on selected open source software projects. In order to gain insights into developers' utilization of this innovative feature, their perceptions of it, and its impact on the software development process, we conducted a comprehensive mixed-methods study involving early adopters of GitHub discussions between January and July 2020. Developers perceive GitHub Discussions as a valuable tool; however, they encounter challenges related to topic duplication between Discussions and Issues. This issue poses a concern, as it leads to confusion and redundancy in communication.[5]

3 METHODOLOGY

3.1 System Development Approach

An incremental approach, also known as an iterative or step-by-step approach, is a development or problem-solving method that breaks down a larger task or project into smaller, manageable increments or steps. Rather than attempting to tackle the entire task at once, an incremental approach focuses on making incremental progress by completing and delivering smaller portions of work in a series of iterations.

- Initial Planning and Requirements Gathering
- Increment Planning and Design
- Development and Implementation
- Testing and Quality Assurance
- Evaluation and Feedback
- Iterative Development and Refinement
- Deployment and Release
- Repeat the Process for Subsequent Increments

3.2 Requirement Analysis

3.3 Feasibility Analysis

A feasibility study is a systematic and structured analysis conducted to determine the viability and practicality of a proposed project plan. It serves as an evaluation tool to assess whether the project can be successfully implemented and if it aligns with the organization's goals and objectives. It involves gathering and analyzing relevant information to determine if the project is technically feasible, operationally feasible, economically feasible, and scheduling feasible.

3.3.1 Economical Feasibility

Since the proposed system has a web application, we will be using free and open-source software development tools such as HTML,CSS,JS, PHP, MySQL and Figma.

We will only need some economy for server for hosting.

3.3.2 Operational Feasibility

Operational feasibility for the proposed system focuses ease of use. As the system is designed to be interactive, users do not require in-depth knowledge of the mobile app to navigate and utilize its features. The user interface (UI) is specifically designed to be user-friendly, ensuring a smooth and intuitive experience. This approach minimizes the need for extensive training and reduces potential resistance from users.

3.3.3 Technical Feasibility

There are several development technologies available. For frontend development, we have HTML,CSS,JS and React JS. For backend development, we have PHP along with the MySQL database. In our application, we have utilized HTML,CSS,JS, for the frontend and PHP with MySQL for the backend. Both HTML,CSS,JS, and PHP are open-source technologies and are supported by large companies with vibrant communities. This ensures that technical support and resources are readily available. Considering the chosen technologies and their strong community backing, the project is technically feasible.

3.4 System Design

3.4.1 Architecture Design

The following diagram shows diagram of our Architecture. Mainly shows what are the functions can be accessed after starting our application.

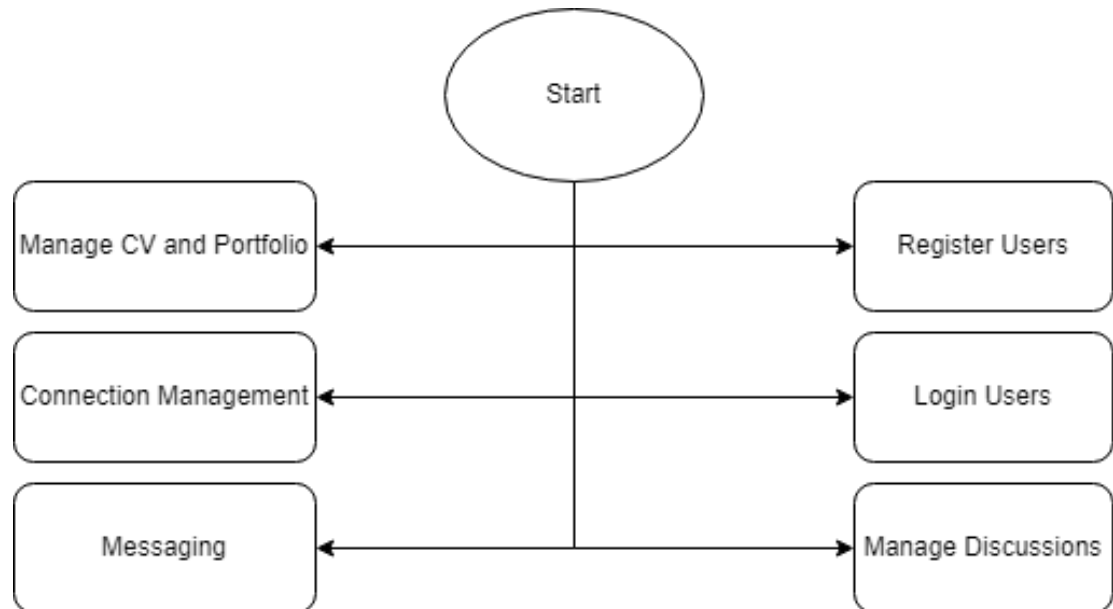


Figure 3.1: Main Architecture of System

3.4.2 Data Modelling(ER-Diagram)

ER Diagram is mainly used to design database schema. With the help of below er diagram we can easily design database in SQL.

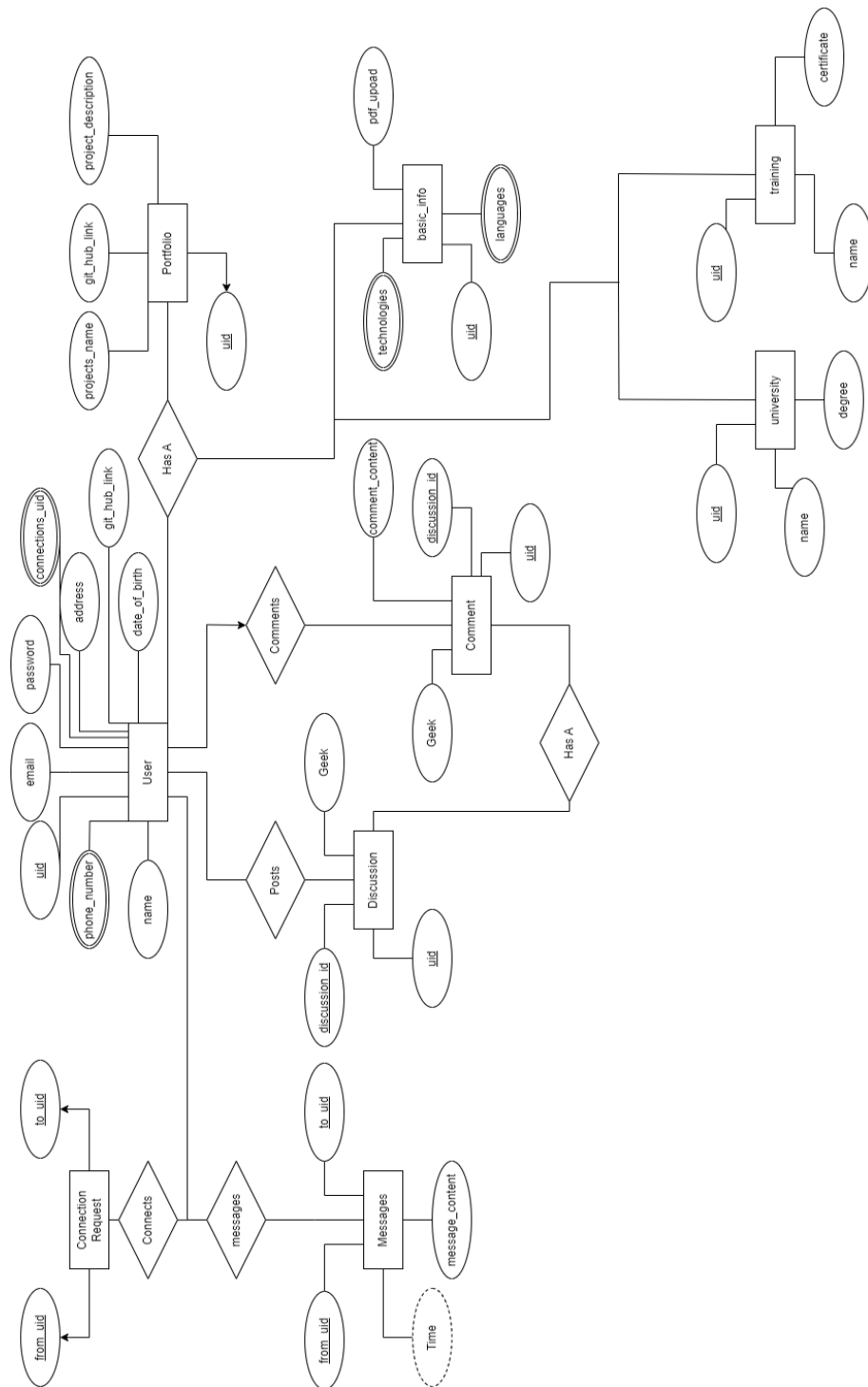


Figure 3.2: ER Diagram of System Data

3.4.3 Activity Diagram

An activity diagram visually presents a series of actions or flow of control in a system similar to a flowchart or a data flow diagram. This diagram showed how our program flow goes on.

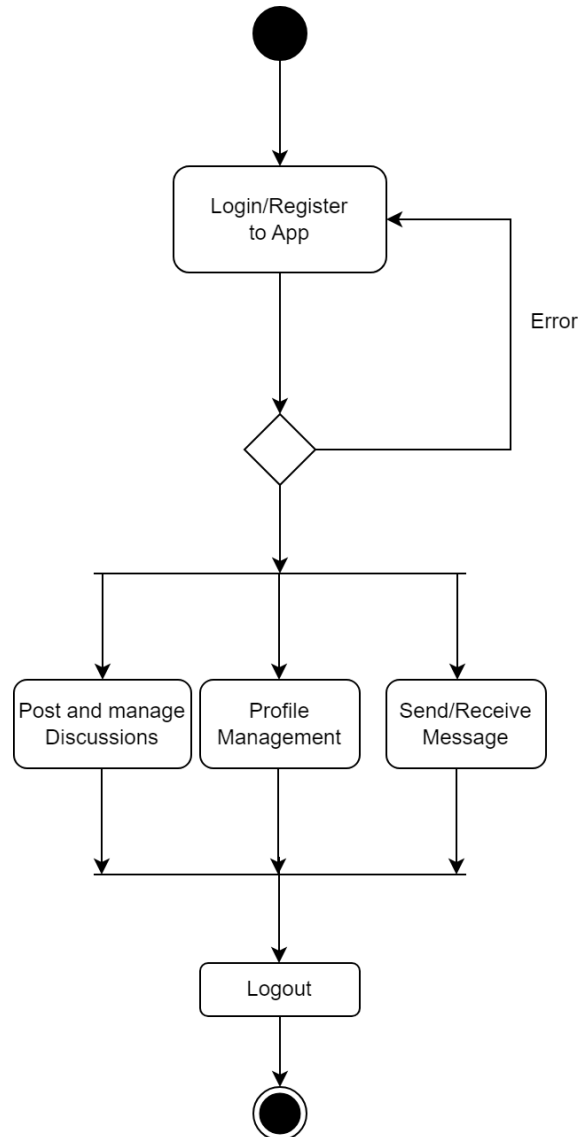


Figure 3.3: Activity Diagram

3.4.4 DFD

DFD or Data Flow Diagram is mainly used to show how data are being flowed in and out of our system. There are 3 levels of DFD i.e Context Level(Level 0),Level 1 and Level 2

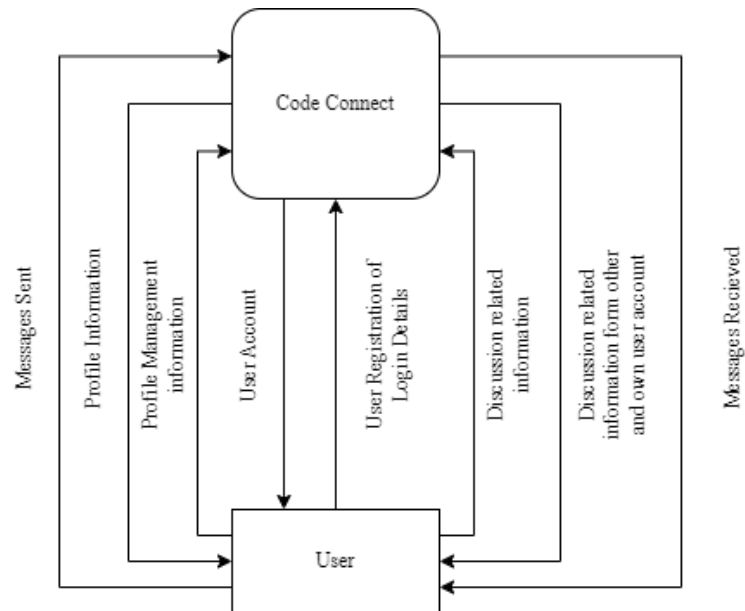


Figure 3.4: Data Flow Diagram (Context Level)

3.4.5 Use Case Diagram

A use case diagram, part of UML, visually represents interactions between actors and a system. Actors are external entities, while use cases depict specific functionalities. Relationships, such as association, generalization, include, and extend, illustrate connections between actors and use cases. The diagram helps in understanding system behavior, requirements, and scope.

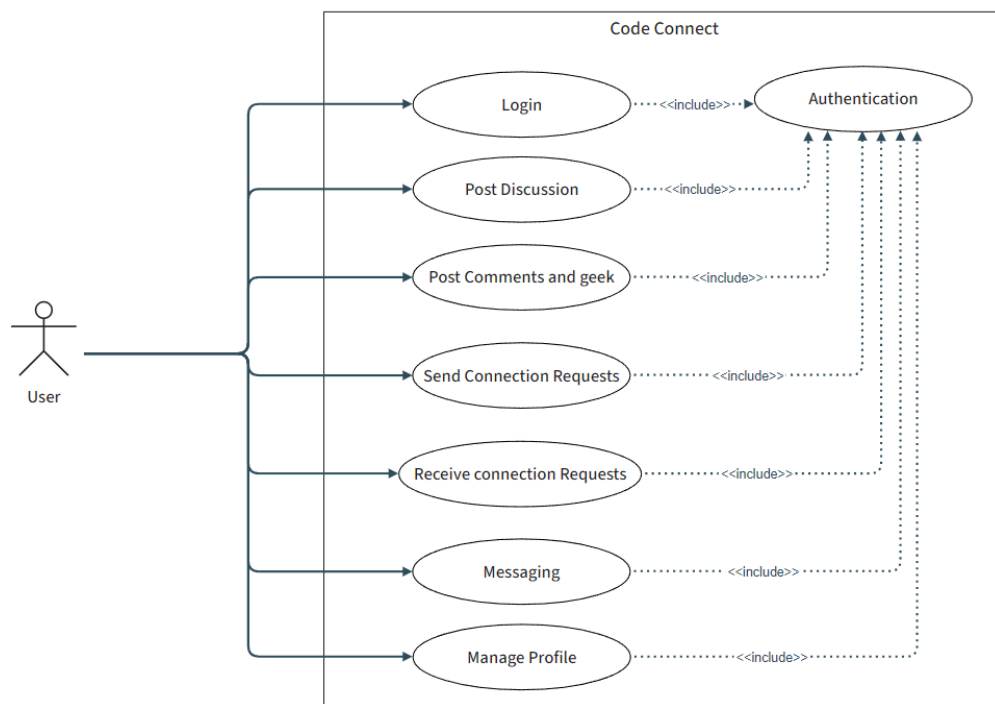


Figure 3.5: Use Case Diagram

4 IMPLEMENTATION

4.1 Tools Used

Figma

Figma is a cloud-based design and prototyping tool that empowers teams to collaborate on UI/UX design projects in real-time. It offers a user-friendly interface and powerful features that make it a popular choice among designers. With Figma, designers can create and share interactive prototypes, design components, and design systems. Its cloud-based nature allows for seamless collaboration, enabling multiple team members to work on the same design simultaneously. Figma supports version control, ensuring that design iterations can be easily tracked and managed.

HTML/CSS

HTML and CSS are two of the most important languages for creating web pages. HTML stands for HyperText Markup Language, and it is used to structure the content of a web page. CSS stands for Cascading Style Sheets, and it is used to control the appearance of a web page. HTML is a markup language, which means that it is used to mark up text with tags. These tags tell the web browser how to display the text. For example, the h1 tag tells the web browser to display the text as a heading, while the p tag tells the web browser to display the text as a paragraph. CSS is a style sheet language, which means that it is used to define styles for HTML elements. These styles can control the font, size, color, and other properties of HTML elements.

MySQL

MySQL is a robust relational database management system that offers a range of features for efficient data storage and retrieval. It supports transactions with ACID properties, ensuring Atomicity, Consistency, Isolation, and Durability. MySQL provides essential capabilities such as automatically updatable views, triggers, foreign keys, and stored procedures, allowing for complex data manipulation and logic implementation. It is compatible with various operating systems, including Windows, Linux, macOS, FreeBSD, and OpenBSD.

Git/Github

Git is a distributed version control system that is both free and open-source, designed

to handle projects of all sizes efficiently and swiftly. It simplifies collaboration by enabling multiple individuals to contribute changes that can be seamlessly merged into a single source. When using Git, the software runs locally on your computer, storing your files and their complete history. Alternatively, you can utilize online hosts like GitHub to store a copy of your files and their revision history. This central repository allows you to easily upload your changes and download updates from other developers, promoting seamless collaboration. Git facilitates automatic merging of changes, allowing multiple individuals to work on different sections of the same file and later merge their modifications without losing any work.

PHP

PHP is a server-side scripting language that is used to create dynamic and interactive web pages. It is a free and open-source language that is widely used by web developers. PHP can be used to process form data, generate dynamic content, and connect to databases. It is also used to create content management systems (CMS) and e-commerce platforms. PHP is a powerful and flexible language that is easy to learn and use. It is a great choice for web developers who want to create dynamic and interactive web pages.

JavaScript

JavaScript is a client-side scripting language that is used to create interactive web pages. It is a powerful and versatile language that can be used to do a wide variety of things, including adding animation and interactivity to web pages, validating form data, processing user input, making Ajax requests to the server, and creating games and other interactive applications.

React .js

React.js is a widely-used JavaScript library for creating efficient and reusable user interfaces. It offers a component-based architecture, virtual DOM for improved performance, and supports declarative programming. With a rich ecosystem of libraries and tools, React.js enables developers to build dynamic and responsive applications for both single-page and server-side rendering.

5 CONCLUSION AND EXPECTED OUTCOMES

5.1 Conclusion

Code Connect is a social networking web application designed specifically for creative it professionals. It should transform the way developers connect, collaborate, and learn from each other. The platform provides a range of features that allow creative it professionals to network, share knowledge, and enhance their skills. Code Connect also fosters a vibrant and inclusive resume and portfolio management system.

5.2 Expected Outcome

Code Connect is a platform that aims to create a thriving community of creative it professionals who can connect, collaborate, and learn from each other. The platform provides tailored features that facilitate meaningful interactions and knowledge exchange among its users. Through Code Connect, creative it professionals can expect to expand their professional network, gain insights from experienced peers, and receive support from the community. They can engage in discussions, seek advice, and offer assistance. Code Connect also aims to accelerate the professional growth of its users by providing access to valuable resources, tutorials, and learning opportunities. By connecting with like-minded individuals and staying up-to-date with the latest trends and technologies, creative it professionals can enhance their skills and advance their careers. The platform's expected outcome is to create a vibrant and supportive ecosystem that empowers creative it professionals and enriches their professional lives. In this complex world of technologies new peoples who are intrested in the field of technology face alot of difficulties. So they will also have exposure with the help of out technology.

APPENDIX A

A.1 Project Schedule

Below is the Gantt chart of our project Schedule. We have planned to perform these specific tasks between these time frames.







PROCESS	2023					
	April	May	June	July	August	September
Requirement Gathering						
Designing						
Coding						
Testing						
Documentation						
Maintenance						

Figure A.1: Gantt Chart of Schedule

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