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CodePartner: A Platform to Find Like-Minded Programmers

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Abstract: ***CodePartner is a global platform that connects programmers to compatible coding partners based on their language, skills, experience, and project preferences. The platform aims to solve the challenge of finding the right coding partner, particularly for those new to the industry or working remotely. CodePartner uses a matching algorithm that considers various factors, including programming languages and project interests, to ensure optimal partner-pairings that work well together. The platform also features a messaging system that allows partners to communicate in real-time and collaborate seamlessly, regardless of their location. CodePartner enables programmers to expand their network, enhance their skills, and produce high-quality projects effortlessly. Whether experienced programmers seeking new collaborators or beginners looking for guidance, CodePartner offers the ideal platform to conn .ect with the right partner and achieve their coding goals.***

Keywords: Programming, coding, collaboration, matching algorithm, software development, remote work, global teams, messaging system, partner-pairings, programming languages, project preferences, technology interests, network expansion, skill enhancement, high-quality projects, programmer compatibility, web app

I. INTRODUCTION

The demand for software development has been increasing rapidly in recent years, and with it, the need for remote teams and collaborations. As a result, it has become increasingly important for programmers to find compatible coding partners to work with, regardless of their location. However, finding the right coding partner can be a challenging task, especially for those who are new to the industry or working remotely. To address this challenge, we have developed CodePartner, a web app platform that helps programmers find compatible coding partners and collaborate more efficiently.

CodePartner uses a matching algorithm, originally inspired by Elo rating algorithms and it's variations [1] to pair programmers based on their language, skills, experience, and project preferences, making it easier for them to find the right partner. Additionally, the platform provides messaging capabilities to enhance collaboration and streamline the development process. With CodePartner, programmers can expand their network, improve their skills, and produce high-quality projects with ease.

In this paper, we will provide an in-depth analysis of CodePartner, including its features, benefits, and potential drawbacks. We will also explore the impact that CodePartner can have on the software development industry, including its potential to improve collaboration and facilitate global teams. By the end of this paper, you will have a comprehensive understanding of CodePartner and its potential to revolutionize the way programmers work together.

II. LITERATURE REVIEW

There are several platforms and tools available that aim to facilitate collaboration among programmers and connect them with potential coding partners. Some of the most notable ones are listed below:

1) *GitHub and GitLab:* They are popular web-based platforms for version control and collaboration that allows programmers to work together on projects, share code, and contribute to open-source projects [2] [3] .
2) *CodeDuet*: The product is very similar to our problem statement and had to aim to solve those issues. However, the product was only ever announced and never released. There is no way to refer to their product with any positive outcome [4] .
3) *Codecademy:* Codecademy is an online platform that provides interactive coding lessons and projects, allowing programmers to learn new skills and connect with other learners [5] .
4) *CodeBuddies:* CodeBuddies is an online community that provides coding challenges and exercises, allowing programmers to improve their skills and connect with other programmers [6] .
5) *Codingame:* Codingame is an online platform that provides coding challenges and games, allowing programmers to improve their skills and connect with other programmers [7] .

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While these platforms offer some degree of collaboration and networking capabilities, they do not provide the same level of matching algorithm or project management features that CodePartner does. CodePartner's focus on pairing programmers based on their skills and project preferences, sets it apart from other collaboration platforms and makes it a unique offering in the software development industry. Seamless communication, accessibility, matchmaking, and portfolio creation in one place are still missing in the above. The drawback of the systems mentioned above is that they are not exclusively focusing on programmers, with none of them having a matchmaking feature. These platforms do offer community creation and some of them also let users upload their projects however none of them have all these features on a stand-alone platform.

III. PROPOSED SYSTEM

The proposed system is a proof-of-concept prototype-like system that aims to demonstrate how the envisioned scope of the CodePartner platform can be implemented. The system will focus on implementing the matchmaking system, user authentication, and a feature that allows users to add their projects, social handles, and portfolios. The prototype shows the complete overview of how the system will work. The objective of this section is to provide a detailed information about our prototype

Modules:

1) Login and Signup
2) User Dashboard
3) Upload/Update Data Page
4) Match Making
5) Sending Match Requests
6) Accepting Match Requests
7) Chat Module

The proposed system will be built entirely on Typescript and open-source web fundamentals, making it completely open source and highly extensible. This will provide ample opportunities for developers to build on the platform and add new features and functionality as needed. Overall, the proposed system for CodePartner represents an exciting new development in the world of software development, providing a powerful platform for programmers to connect and collaborate with one another from anywhere in the world.

IV. IMPLEMENTATION

The methodology for the CodePartner project involves designing and developing a system that can match programmers with like-minded programmers throughout the globe. The implementation is done as per the steps below.

A. Designing The System And Appropriate Schema

Designing the system and appropriate schema involved defining the data structure and relationships between the entities in the system. The first step in this process was to identify the different entities involved in the system, such as users, their preferences, skills, and interests. Once the entities were identified, the next step was to determine the relationships between them. For example, a user might have multiple skills and interests, and these might be related to other users who have similar skills and interests.

The design of the system and schema was critical to the success of the project because it determined the data that would be collected, how it would be stored, and how it would be used to match programmers with like-minded programmers.

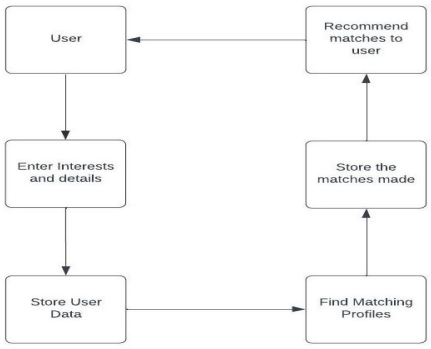


Fig. 1: System Architecture of the proposed system

The technology used in designing and creating this prototype are as follows:

1) NodeJS [8]
2) Typescript [9]
3) React, ViteJS [10] [11]
4) PrismaJS [12]
5) CockroachDB [13]
6) ExpressJS [14]

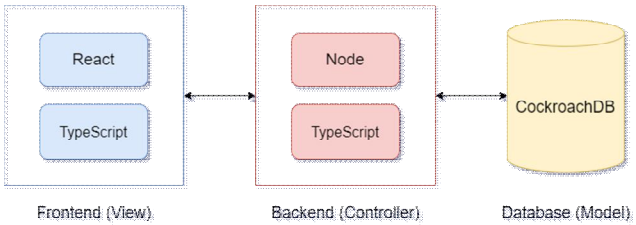


Fig. 2: MVC Architectural Pattern of the proposed system

B. Setting Up A Database With Proper Schema

Once the schema was designed, the next step was to set up a database with the appropriate schema. This involved selecting a database management system (DBMS) that is compatible with the schema design and can handle the expected amount of data and traffic. The database schema was then implemented in the DBMS to create the necessary tables, columns, and relationships.

Setting up a database with the proper schema is crucial because it provided a structured and organized way to store and retrieve data. It would be able to handle large amounts of data and provide fast access to the data when needed. The database provider decided on, was CockroachDB Cloud [13].

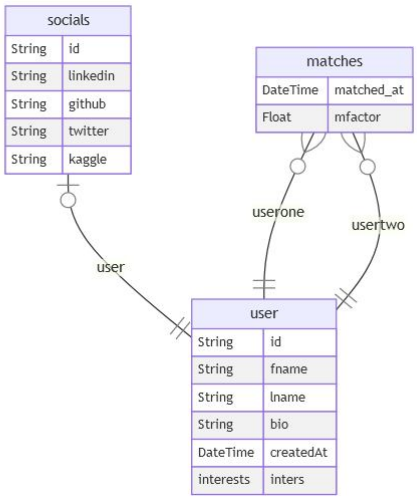


Fig. 3: ER Diagram of the proposed system

C. Creating A Backend Which Can Communicate With The Database

The next step in the methodology was to create a backend that can communicate with the database. This involved selecting a programming language and framework that can handle the complex logic required for the matching algorithm.

The backend was designed to handle user authentication, add, or update user details in the database, scan the database to find matches in intervals, add or update any matches found, and communicate with the front end. The backend was responsible for handling the business logic of the system and ensuring that the data is stored and retrieved correctly from the database.

Creating a backend that can communicate with the database was critical because it provided the foundation for the CodePartner project. The backend acted as the brain of the system, processing user data and matching users based on their preferences, skills, and interests. The backend needed to be efficient and scalable to handle many users and ensure that matches are made quickly and accurately.

D. The Backend Would Handle The Following

The backend was responsible for handling all user authentication, adding, or updating user details in the database, scanning the database to find matches in intervals, adding or updating any matches found, and communicating with the front end.

User authentication was a critical aspect of the CodePartner project to ensure that user data was secure and protected. The backend was responsible for authenticating users when they logged in or registered for the system, verifying their credentials, and ensuring that they had the appropriate permissions to access the system.

The backend also handled the storage and retrieval of user data. This involved adding or updating user details in the database when a user registered or updated their preferences, skills, and interests. The backend was responsible for ensuring that the data was stored accurately and securely in the database.

The backend was also responsible for scanning the database at intervals to find matches based on user preferences, skills, and interests. The backend algorithm would compare the data from different users and determine the best matches based on their compatibility. Several matching algorithms were refereed to and studied such as Elo rating algorithms and its various modified versions [1]. However, incorporating such advanced algorithms [15] [16] and various parameters proved to be very complex for a prototype. The prototype uses Set Theory to match users based on many interests the users have in common (Intersection of Sets) compared to the sum of all of their interests (Union of Sets).

Finally, the backend was responsible for communicating with the front end which involved sending data and receiving requests from the front end, and handling any errors or exceptions that occurred during the communication process.

E. Creating A Frontend

The frontend was designed to communicate with the backend using REST APIs. This involved designing a user-friendly interface that allowed users to input their preferences, skills, and interests. The frontend would then send this data to the backend using REST APIs, which would process the data and return the results to the frontend. The frontend was critical to the success of the CodePartner project because it provided a user-friendly interface that allowed users to interact with the system. The frontend was designed to be intuitive, easy to use, and responsive, ensuring that users could easily input their data and find matches.

F. Testing Of The System

Once the CodePartner system was developed, it was thoroughly tested to ensure that it functioned as intended. The testing process involved both manual and automated testing to ensure that the system was reliable, scalable, and secure.

Manual testing involved performing various actions on the system and verifying that the expected results were obtained. Automated testing involved creating test scripts that automatically tested the system's functionality, performance, and security.

Testing was crucial to the success of the CodePartner project because it ensured that the system was robust, reliable, and secure. Testing helped to identify and fix any issues before the system was released to the public.

V. RESULTS

In conclusion, the methodology outlined above was used to design, develop, and test the CodePartner system. The system was designed to match programmers with like-minded programmers throughout the globe. The methodology involved designing the system and appropriate schema, setting up a database with proper schema, creating a backend which can communicate with the database, creating a frontend which communicates with the backend using REST APIs, testing the system, and concluding the project. By following this methodology, the CodePartner project was able to successfully match programmers based on their preferences, skills, and interests, providing a valuable tool for programmers looking to connect with like-minded individuals.

VI. FUTURE SCOPE

CodePartner has significant future potential, including the development of advanced matchmaking algorithms, collaboration tools, and user feedback and ratings. Integration with other coding platforms and tools is another possibility, as is the development of a mobile app. With continued attention and development, CodePartner has the potential to become a leading platform for global collaboration among programmers.

1) Advanced matchmaking algorithms: While the initial matchmaking system will be designed to connect users based on their skills, interests, and work style, there is room for further development of this feature. In the future, CodePartner could incorporate machine learning algorithms to provide even more accurate and personalized matches between users which will also consider the proficiency level of the user on their skills.

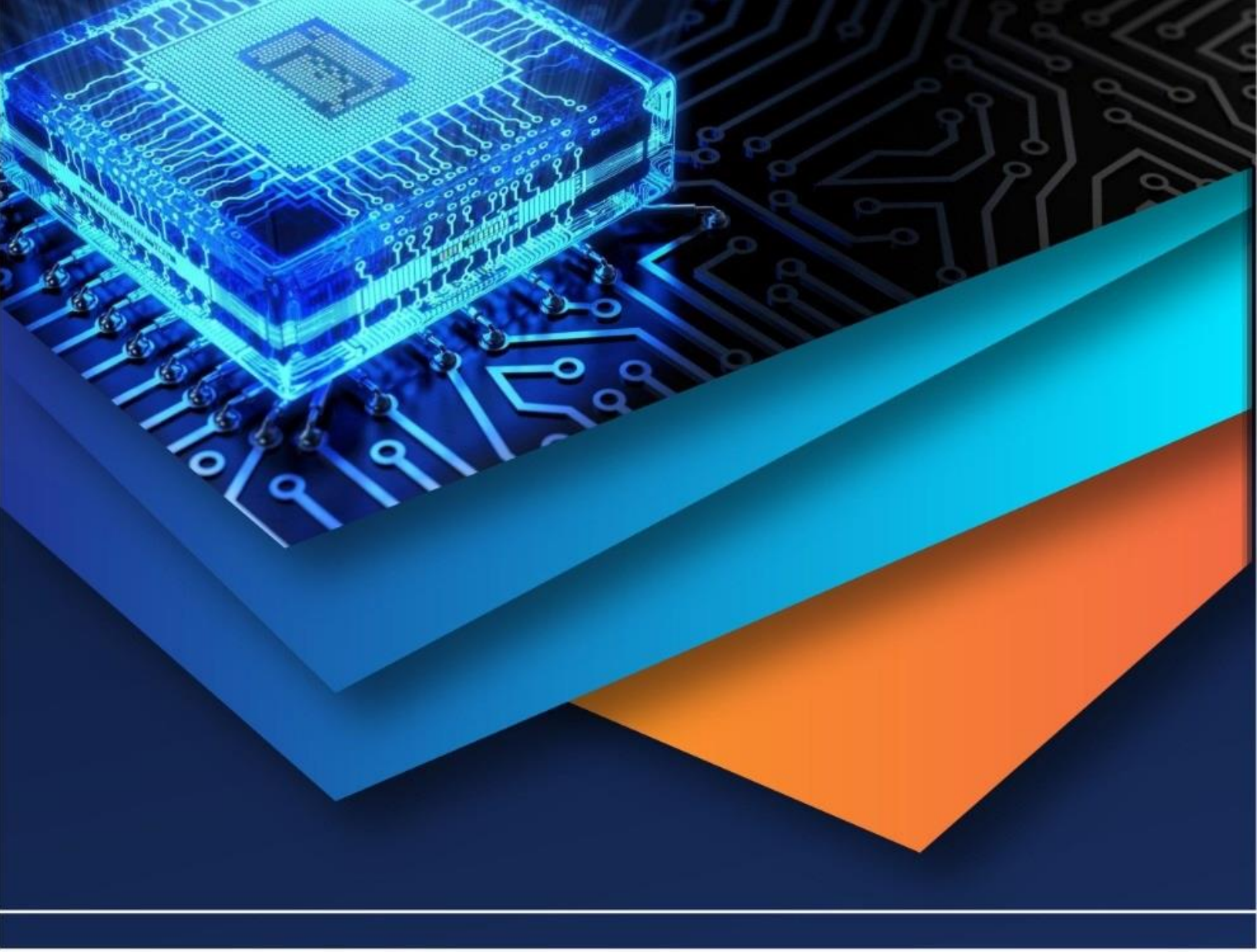
2) Collaboration tools: CodePartner's chat module will provide a basic communication platform for users to discuss projects and work together. However, there is potential to expand this feature with additional collaboration tools, such as shared code editors or real-time project management tools.
3) User feedback and ratings: As the platform grows and more users join, it may be useful to incorporate a feedback and rating system to help users make more informed decisions about potential coding partners.
4) Integration with other platforms: CodePartner could potentially integrate with other coding platforms and tools, such as GitHub or Stack Overflow, to provide users with even more resources and tools to work with.
5) Mobile app development: While the initial system will be web-based, there is potential to develop a mobile app version of CodePartner in the future, making it even more accessible and convenient for users.

VII. CONCLUSION

In conclusion, CodePartner represents a promising new platform for programmers seeking to connect and collaborate with each other from around the world. The proposed system, with its emphasis on user authentication, matchmaking, and user-uploaded data, is a proof-of-concept prototype that has the potential to be extended and refined in the future. With additional development, CodePartner could incorporate advanced features such as collaboration tools, user feedback and ratings, and integration with other coding platforms and tools. The future scope for CodePartner is significant, and we look forward to seeing the platform grow and evolve to meet the needs of its users.

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