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Online Collaborative Project Management System

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Abstract - *The idea of the project is to develop a platform that allows users to find relevant projects and work together, for this purpose searching and matching algorithms will be used to maximize the possibility of finding a good developer for the project. This will be based on multiple parameters like their skills, time taken to do previous projects, relevant domains, etc. The platform will enable a user to quickly add members, assign tasks, customize workflow, and track the progress of their work to completion. The project would be primarily focussing on effective usage of searching and recommendation techniques for collaboration of developers to increase efficiency and hence overall user experience.*

Key Words: Project Management, Online Collaboration, Recommendation System, User Matching, Social Media

1.INTRODUCTION

Web Engineering is the application of systematic, disciplined and quantifiable approaches to development, operation, and maintenance of Web-based applications. It is both a proactive approach and growing collection of theoretical and empirical research in web application development[8]. It focuses on the methodologies, techniques, and tools that are the foundation of Web application development and which support their design, development, evolution, and evaluation[9].

The Online Collaborative Project Management System is a web based application to manage various types of projects and to find people with similar interests to work with on a project through a recommendation system. The Online Collaborative Project Management System can be used for creating, updating, and managing projects. The project owners will be able to add other members to the project to work with them. The leaders can assign different tasks to the project members and also add deadlines to these tasks. A user can keep a track of their projects and their assigned works and update it as they complete it. The Online Collaborative Project Management System is intended for people who want to keep a track of all their individual or group projects in one place.

2. LITERATURE SURVEY

A. "Survey of Web-Based Project Management System" - T. H. Shaikh, F. L. Khan, N. A. Shaikh, H. N. Shah and Z. Pirani, (2018): **[1]** The paper presents a comprehensive survey of existing web-based project management systems and proposes a system based on the findings. Project management systems widely used in organisations and among open source developers include various features such as Task Management, Real-time Monitoring, Chatbox, Notifications, and Alerts. Most of the work is carried out only for managing the projects but other features such as task assignment, prediction regarding the on-time completion of the project are not implemented. Based on the above findings, the paper sums up the drawbacks of existing systems and proposes a better system that includes features like predictive analysis that are currently not common with available systems.

B. "Recommender System based on Extracted Data from Different Social Media. A Study of Twitter and LinkedIn " - Vahid Pourheidari, Ehsan Sotoodeh Mollashahi ,Julita Vassileva, Ralph Deters - (2018): **[2]** The main purpose of this research paper is to develop a functional recommender system which can recommend user accounts to computer scientists based on their skills and interests and predict their skills based on the accounts they are following on Twitter. The most important hubs in this network are identified and the position of programming languages in this network is investigated. A collaborative, a content-based, a mix, and a feature combination algorithm was developed and studied. The proposed algorithm, the feature combination recommender system, shows better performance because it needs less time to create the suggestion list in comparison to the content based and mix methods.

C. "The Design and Implementation of a KNN-based Mobile Application"- Jingbo An, Zhiyi Fang, Qun Liu, Min Liu , Haoning Liu (2017): **[3]** This paper focuses on designing a kind of social media software. The majority users of the software are college students. The novelty of this software lays in the personal interests-based friends match patterns when a user wants to add friends. The software also could support both online and offline communications with achieving the purpose to enrich the users' extracurricular activities. In order to increase the accuracy of the friend-matching function, various classification algorithms are studied and found that the "K-nearest neighbor" is optimal to be incorporated into the project with considerable performance. The paper discusses the improved friend-matching algorithm, a large part of which draws on the ideas and steps of KNN algorithm.

D. "Social Account Matching in Online Social Media using Crosslinked Posts"-Waseem Ahmada, Rashid Ali (2019): **[4]** In this paper, an efficient framework for user identity search and matching by exploiting user-generated posts on Twitter is proposed .An online user often reveals his/her identity on different social networks to collect

followers. The proposed method retrieves the self-disclosed personal information from Twitter and automatically extracts the most relevant feature to match the user identity across three semantically different social networks within the recall range of 0.48 to 0.72 for a different set of social networks. The experimental results show that a large number of users publicly share information on the source social networks. The application of this research work may be in the item or product recommendation, profile integration, etc.. The proposed method may be used as a baseline for user identity resolution across multiple social networks. This work can be extended up to five social networks for user account matching.

2.1 Summary of Related Work

The summary of methods used in literature is given in Table 1.

Table 1 Summary of literature survey

Literature	Advantages	Disadvantages
T. H. Shaikh et al. 2018 [1]	Proposes better features like that are currently not common with available systems.	Only provides an outline for the future systems instead of detailed implementation details.
Ralph Deters et al. 2018 [2]	Compares a set of algorithms and points out the optimal one that shows better performance.	System needs to be further developed in terms of efficiency of algorithms for more accuracy across platforms.
Jingbo An et al. 2017 [3]	The project could support both online and offline communications with achieving the purpose to enrich the users	The accuracy of the project currently achieved needs to be further improved with future learning accumulation.
Rashid Ali et al. 2019 [4]	Provides a baseline for user identity resolution across multiple networks and can be extended up to five social networks for user matching.	It can only work based on publicly available self disclosed information

3. PROPOSED WORK

The aim of the project is to develop a platform that allows users to find relevant projects and work together, for this purpose searching and matching algorithms will be used to maximize the possibility of finding a good developer for the project. This will be based on multiple parameters like their skills, time taken to do previous projects, relevant domains, etc. The platform will enable a user to quickly add members, assign tasks, customize workflow, and track the progress of their work to completion. The project would be primarily focussing on effective usage of searching or recommendation techniques for collaboration of developers to increase efficiency and hence , overall user experience .

3.1 System Architecture

The system architecture is given in Figure 1. Each block is described in this Section.

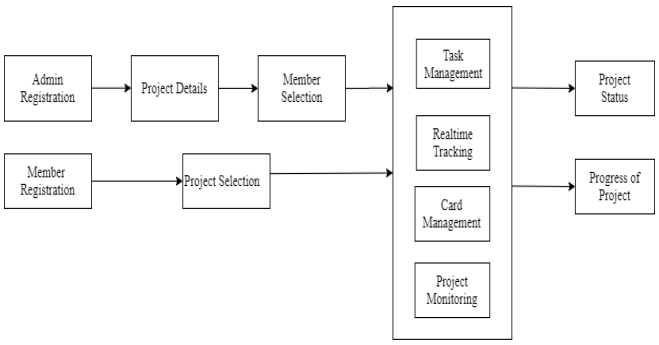

Fig. 1 Proposed system architecture

A. Account Management Module Components :

1. Admin Registration - The creator of a new project becomes leader of the project by default, adds other members to projects and assigns work to other members
2. Member Registration - Any user looking to work on a project can register as a member and search for relevant projects using suggestion cards.
3. Card Management - Users are given choices to make multiple changes to their existing profile cards.

B. Project and User Matching Module Components:

1.Member Selection - The admin/project owner can choose project members from a list of recommendations of profiles having similar interests and relevant work experience.

2.Project Selection - Users on this system will get project recommendation cards on their profile from which they can choose projects that seem relevant .

C. Project Management Module Components:

1.Task Management - The project owner can assign tasks and set deadlines for each team member.

2.Project Monitoring - The leader will be able to monitor

the overall work being performed by each member .
3.Project Status - This would provide details of all past projects that have been completed / ongoing projects.

D. Time Management Module Components :

1. Realtime Tracking - Here all the work being done will be trackable and all users can check current status
2. Scheduling of meetings and Setting calendar deadlines for tasks assigned.

4. REQUIREMENT ANALYSIS

The experiment setup is carried out on a computer system which has the different hardware and software specifications as given in Table 4.1 and Table 4.2 respectively.

4.1 Software

Table 4.1 Software

Operating System	Debian Linux /Windows
Programming Language	Javascript,Python
Frameworks	ReactJs, NodeJs
Database	MongoDB

4.2 Hardware

Table 4.2 Hardware

Processor	Any x86_64 architecture processor
HDD	180 GB and above
RAM	1GB

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