IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 4, November 2026
Impact Factor: 8.2

Skill Matching Platform with Skill Verification and Trust-Based Reputation Scoring

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Abstract : *Students have many useful skills such as programming, graphic design, writing, tutoring, video editing and presentation making, and other students need these skills for projects, assignments, events and small tasks. At present they find one another through word of mouth, WhatsApp groups and social media. These methods are unorganised and depend on personal contacts, so a student may not find the right person, cannot easily verify a claimed skill, and has no common record of ratings or completed work.*

This project proposes a web-based Skill Matching Platform with Skill Verification and Trust-Based Reputation Scoring. Users register and list the skills and services they offer. Other users search and filter by required skills, and the system suggests suitable matches by com-paring a requirement with user profiles. A short practical test or task lets a user verify a skill. Verified users receive a Skill Trust Score and badge, while ratings and completed ser-vices further contribute to their reputation. The final ranking combines the skill match score and the trust score. The frontend is built with HTML, CSS and JavaScript, the backend with Python and Flask, and the data is stored in SQLite.

The expected outcome is a working platform that helps students discover suitable and reli-able peers, gives new users a fair start through practical tests, and shows reliability through a transparent trust score.

Keywords: *programming, graphic design, writing*.

I. INTRODUCTION

1.1 PROJECT IDEA

The idea is to bring together three things that are normally found separately: matching people by skill, proving a claimed skill, and recording how reliable a person has been. A student lists the skills they offer, and another student posts the skills they need. The platform compares the two, suggests suitable users, lets providers verify a skill with a short practical test, and builds a trust score from verification, ratings and completed services. The final ranking uses both the skill match and the trust score, so that the person shown first is both relevant and reliable.

1.2 MOTIVATION OF THE PROJECT

- Students offer useful skills such as programming, graphic design, writing, tutoring, video editing and presentation making, but others find them only through word of mouth, WhatsApp groups and social media.
- These methods are unorganised and depend on personal contacts, so the right person is often not found.
- A claim such as "I know Python" cannot easily be checked, so a student has to trust it without proof.
- There is no common record of ratings or completed work, so good work does not build a visible reputation.
- New students without any track record find it hard to be chosen, and need a fair way to show their ability.

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www.ijarsct.co.in
DOI: 10.48175/IJARSCT-40946

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1.3 LITERATURE SURVEY

1.3.1 Review of the Papers

Resnick, Zeckhauser, Friedman and Kuwabara (2000) explained how reputation systems share feedback about past behaviour so that strangers can decide whom to trust, which supports the use of rating-based trust scores. Jøsang, Ismail and Boyd (2007) surveyed trust and reputation systems for online service provision and the methods used to compute trust scores. Dellarocas (2003) studied online feedback mechanisms and their design problems, noting that feedback can be biased or manipulated, and Resnick and Zeckhauser (2002) studied eBay's reputation system and showed that reputation can support trust between strangers, although most feedback is positive.

Adomavicius and Tuzhilin (2005) surveyed content-based, collaborative and hybrid recom-mender approaches; comparing the skills required with the skills offered is a content-based approach. Bobadilla, Ortega, Hernando and Gutiérrez (2013) reviewed recommender meth-ods, datasets and evaluation measures, and the Recommender Systems Handbook (Ricci, Rokach and Shapira, 2015) is a reference on recommendation techniques and their evalua-tion.

Pallais (2014) showed that new workers without a track record can be difficult to hire and that an initial record helps, which explains why students need verification and early ratings. Kokkodis and Ipeirotis (2016) studied how reputation in one skill category carries over to others, which supports keeping reputation linked to skills. Hamari, Sjöklint and Ukkonen (2016) studied participation in peer-to-peer sharing platforms and showed that such plat-forms depend on participation and trust.

1.3.2 Summary Table

No.	Authors	Year	Contribution / Limitation
1	Rubén Alonso, Danilo Dessí, Antonello Meloni, Diego Reforgiato Recupero.	2025	Used transformers for job matching and skill recommendations.
2	Anh Chi Tuan, Minh Tuan Dang, Hai Nam Do, Vijender Kumar Solanki, Jorge Torres, Ruben Gonzalez Crespo, Thi Ngoc Anh Nguyen.	2024	Understanding relationships between skills. Used a skills ontology to improve candidate matching.
3	Jens-Joris Decorte, Jeroen Van Hautte, Thomas Demeester, Chris Develder.	2024	Identifying and evaluating related skills. Outcome: Introduced a benchmark and improved skill-relatedness modelling.
4	Yasser Saeid, Viktor Wolf, Felix Neubürger.	2024	Matching individual skills with suitable jobs. Applied deep learning to skill-based job prediction.
5	Dipanwita Saha, Dinabandhu Bhandari, Gunjan Mukherjee	2023	Matching jobs to users' skills and preferences. Outcome: Developed a hybrid text-based job recommendation approach.
6	Pallais	2014	Hiring of new workers and the value
			of an initial record; paid online labour
			market.
7	Kokkodis & Ipeirotis	2016	Transfer of reputation across skill cate-
			gories; relies on large platform data.
8	Hamari, Sjöklint &	2016	Participation in sharing platforms;
	Ukkonen		survey-based and self-reported.
9	Bobadilla et al.	2013	Survey of recommender methods and
			evaluation; focuses on accuracy, not

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			trust.
10	Ricci, Rokach & Shapira	2015	Handbook of recommendation tech-
	(eds.)		niques; general reference, no skill veri-
			fication.

Table 1.1: Summary of the literature survey

1.3.3 Gap Identified

Existing recommender systems focus on similarity or matching, while reputation systems generally depend on feedback from previous work. New users may not have ratings, and a profile claim alone does not prove ability. Many studies concern paid online labour mar-kets or general sharing platforms rather than students offering skills to peers. A platform that combines skill matching, practical skill verification and a rating-based trust score for students, and ranks users by both relevance and reliability, addresses this gap.

Match score: the fraction of required skills offered by the user,

$$M(R, U) = \frac{|R \cap S_U|}{|R|}, \qquad 0 \le M \le 1.$$

For example, if R = {Python, SQL, HTML} and user A offers {Python, SQL}, then M =2/3 = 0.67.
Verification score: the test percentage is (marks obtained / total marks)×100. A skill is verified if the test percentage is at least the pass mark (initially 60%). The verification score is the average of the best test percentages over the n verified skills, and is 0 when the user has no verified skill:

$$V(U) = \frac{1}{n} \sum_{i=1}^{n} \text{best Test } \%_i.$$

Rating and service scores: ratings are given from 1 to 5 after a completed service, and the service score rewards completed services up to a fixed limit Nmax (initially 10):

$$Rt(U) = \frac{\text{average rating}}{5} \times 100, \qquad S(U) = \min\left(\frac{\text{completed services}}{N_{max}}, 1\right) \times 100.$$

Skill Trust Score:

$$T(U) = w1V(U) + w2Rt(U) + w3S(U),\ w1 + w2 + w3 = 1,\ wi > 0,$$

with default weights w1 = 0.4, w2 = 0.4, w3 = 0.2, so that $0 \leqslant T \leqslant 100$. The badge is Highly Trusted for $70 \leqslant T \leqslant 100$, Trusted for $40 \leqslant T < 70$ and New / Unverified for $0 \leqslant T < 40$.
Final ranking score: users are displayed in decreasing order of

$$F(R, U) = \alpha M(R, U) + (1 - \alpha)\frac{T(U)}{100}, \qquad 0 \le F \le 1,$$

where α is the weight given to skill match (initially α = 0.6).
Constraints: the weights in each formula add up to 1 and each score remains within its stated range. Only registered users can post requirements, take tests or give ratings, and a rating can be submitted only after a service is marked completed.

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Functions: f1: registration data → user profile; f2: (R, SU) → M (matching); f3: test answers → V (verification); f4: (V, Rt, S) → T (trust score); f5: (M, T) → F (ranking); f6: (service, rating) → updated T .

Success conditions:

• User registers and logs in successfully and skills are saved to the profile.

• Search returns users matching the filters and matching returns a ranked list with M >

II. SYSTEM DESIGN

2.1 SYSTEM ARCHITECTURE

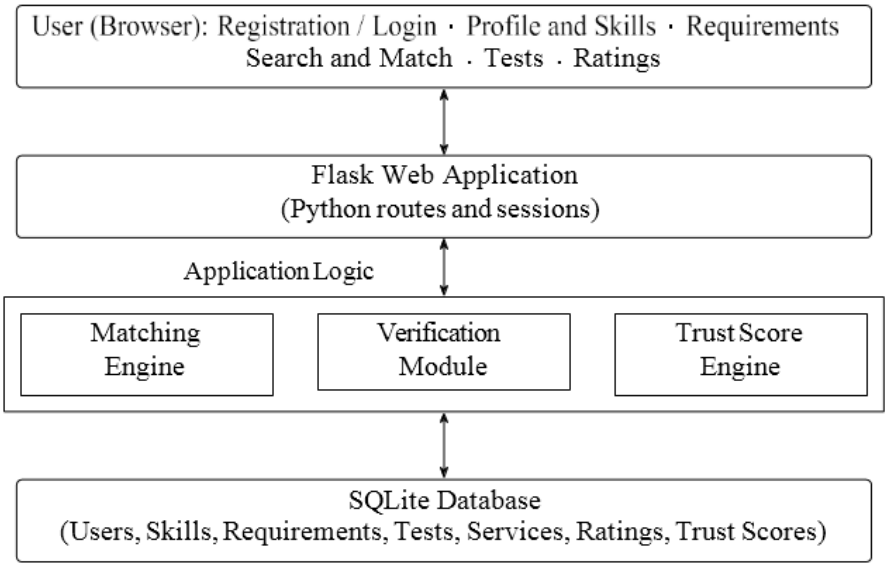


Figure 2.1: System Architecture

The browser interface (HTML, CSS and JavaScript) sends requests to the Flask web ap-plication, which handles routes and sessions. Flask calls the application logic layer. The Matching Engine compares the required and offered skills, calculates the match score and applies the final ranking. The Verification Module provides the practical tests, marks the result and records the verification score. The Trust Score Engine combines verification, rat-ings and completed services into the Skill Trust Score and badge. All project data is stored in SQLite.

III. SUMMARY AND CONCLUSION

This preliminary report presented the design of a Skill Matching Platform with Skill Ver-ification and Trust-Based Reputation Scoring. The problem of finding skilled and reliable peers through word of mouth, WhatsApp groups and social media was defined, the literature on reputation systems, recommender systems and online labour markets was reviewed, and the requirements, mathematical model and resources were specified. A layered architecture was designed in which a Flask web application calls a matching engine, a skill verification module and a trust score engine, with SQLite as the database. The data flow, activity, use case and sequence diagrams were prepared, and a plan for implementation and testing in Term-II was made.

CONCLUSION

The study shows that matching alone does not tell a student whether a person is reliable, and that reputation alone does not help a new user who has no ratings yet. Combining skill matching, a practical skill verification test and a rating-based trust score, and ranking users by both relevance and reliability, offers a simple and transparent way to find

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suitable peers. The proposed platform is expected to make skilled peers easier to discover, to give new users a fair start through practical tests, and to give visible recognition for ratings and completed services. In the next stage the system will be implemented and tested with sample college data, and the weights and pass mark will be reviewed.

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