

Result Paper on Acadlinker - Skill-Based Student Network with a Touch of AI

V. S. Nalawade¹, Swamini Bhandare², Sumit Bhole³, Vaishnavi Bhongale⁴, Mayur Ghayal⁵

^{1,2,3,4,5}Department of Computer Engineering, S. B. Patil College of Engineering, Indapur, Dist-Pune, India Maharashtra, India.

¹vinaynalawade2007@gmail.com, ²swaminibhandare10@gmail.com, ³sumitbhole0205@gmail.com, ⁴bhongalevaishnavi873@gmail.com, ⁵mayurghayal734@gmail.com

<p>Peer Review Information</p> <p><i>Type: Article</i> <i>Received: 22 March 2026</i> <i>Revised: 06 April 2026</i> <i>Accepted: 24 May 2026</i> <i>Published: 05 June 2026</i></p>	<p style="text-align: center;">Abstract</p> <p>AcadLinker is an AI-powered student networking platform that connects students based on their skills, interests, and goals. It helps bridge the gap between academic learning and practical application by enabling users to create skill-based profiles and collaborate on real-world projects. Using AI, the platform provides personalized recommendations for peers, projects, and learning paths, improving engagement and collaboration. It also includes tools for communication, project management, skill validation, and performance tracking. Additionally, AcadLinker offers career guidance by aligning student skills with industry needs, helping them become more job-ready and competitive..</p> <hr/> <p>Keywords: Artificial Intelligence; Student Networking; Skill-Based Matching; Personalized Recommendations; Collaborative Learning; Career Guidance; Educational Technology.</p>
--	---

How to Cite This Article

Nalawade, V. S., Bhandare, S., Bhole, S., Bhongale, V., & Ghayal, M. (2026). Result paper on Acadlinker: Skill-based student network with a touch of AI. *International Journal of Electrical, Electronics and Computer Systems*, 15(1), 27–32.

Introduction

AcadLinker is an AI-powered platform designed to enhance student learning and collaboration by bridging the gap between academic knowledge and practical skills. Unlike existing platforms that focus only on content delivery or general networking, AcadLinker integrates both aspects into a single system. It enables students to create skill-based profiles that showcase their practical abilities and achievements, helping them stand out in the competitive job market. Using Artificial Intelligence, the platform analyzes user behavior, skills, and preferences to provide personalized recommendations, suggest relevant projects, and match students with compatible peers for effective collaboration. Additionally, AcadLinker offers an all-in-one environment that includes networking, learning, and project management tools, allowing students to work on real-world problems and track their progress. With features like performance tracking and career guidance, the platform supports continuous improvement and informed decision-making. Overall, AcadLinker aims to prepare students to meet industry demands by promoting hands-on experience, collaboration, and skill development in a smart and efficient ecosystem.

Literature Survey

1. Paper Title: Promoting University Students' Self-Regulated Learning Skills on E- Learning Platforms Using Educational Data Mining Authors: Eric Araka, Ruth Wario, Elizaphan Maina Year of Publication: 2025 Problem solved: Limited opportunities for peer collaboration and skill-based learning in higher education e-learning systems. Technique used: A web-based platform using data mining to support collaboration, skill matching, and knowledge exchange through chat and file sharing. fluture work: Enhance system personalization using AI chatbots and improved aca- demic recommendation models.

2. Paper Title: Analysis of Student Engagement Towards Learning Materials in LMS: A Case Study Authors: Zarina M. Noh, Norhidayah M. Yatim, Wira H. M. Saad Year of Publication: 2024 Problem solved: Lack of clarity about how students engage with different types of learning materials in LMS environments. Technique used: Case study using Moodle LMS to analyze engagement across various content types and student interactions. fluture work: Extend the study to more courses and use predictive analytics for learn- ing success evaluation.

3. Paper Title: EduGraph: Hypergraph Neural Recommender Authors: M. Li et al. Year of Publication: 2024 Problem solved: Existing MOOCs overlook learning path relationships between dif- ferent topics and skills. Technique used: Introduced a hypergraph neural model to capture multi-skill learn- ing relationships for personalized recommendations. fluture work: Develop skill-based pathway systems in academic institutions to im- prove adaptive learning

4. Paper Title: Knowledge Graphs for LLM Explanations Authors: H. Abu-Rasheed et al. Year of Publication: 2024 Problem solved: Difficulty in interpreting black-box behavior of AI learning recom- mendations. Technique used: Combined knowledge graphs with language models to provide ex- plainable educational suggestions. fluture work: Build explainable AI-driven advisors to recommend courses and skill paths in universities.Problem solved: Fragmented educational data reduces accessibility and learning effi- ciency.

5. Paper Title: Semantic Summarization of Knowledge Graphs Authors: H. Yu et al. Year of Publication: 2024 Technique used: Applied semantic summarization to unify and organize knowledge graphs for better understanding. fluture work: Develop skill-centric educational frameworks that improve knowledge retrieval and learning flow.

6. Paper Title: GraphCA: Counterfactual Graph Augmentation Authors: X. Wang et al. Year of Publication: 2023 Problem solved: Learning systems often generate spurious or misleading patterns in knowledge tracing models. Technique used: Used counterfactual graph augmentation to filter irrelevant learning dependencies. fluture work: Extend the model for adaptive multimodal tutoring systems and person- alized course recommendations.

7. Paper Title: Peer Learning – An Interactive and Collaborative E-Learning Applica- tion for College Students Authors: H. A. P. M. Sirithunga, B. G. S. Deshan, P. H. D. Sigera Year of Publication: 2022 Problem solved: Students faced challenges in collaborative learning during the pan- demic and economic disruptions. Technique used: Developed a web-based platform for peer learning, enabling discus- sions and resource sharing. fluture work: Enhance interactive tools to support guided mentorship and real-time academic collaboration.

8. Paper Title: A Complete Chatbot-Based Architecture for Answering User's Course- Related Queries in MOOC Platforms Authors: Sparsh Amarnani, Neel Bhagat, Hritwik Ekade Year of Publication: 2022 Problem solved: Lack of personalized interaction and query support in online MOOC courses. Technique used: Designed an NLP-powered chatbot that responds to course-related questions using course content. fluture work: Create more intelligent conversational agents that improve instructor–student engagement and satisfaction.

9. Paper Title: CMKT: Concept Map Knowledge Tracing Authors: Y. Lu et al. Year of Publication: 2022 Problem solved: Traditional knowledge tracing models lack transparency and inter- pretability. Technique used: Combined concept maps with skill graphs for visual and explainable knowledge tracking. fluture work: Implement in classrooms to support multi-domain learning analysis and adaptive

assessment 4

10. Paper Title: Designing an Interactive Online Learning Platform to Support a Practical Subject During COVID-19 Outbreak Authors: Peerumporn Jiranantanagorn, Konlayut Tippayakulpiroj, Panuwat Saikaw Year of Publication: 2021 Problem solved: Practical subjects like programming were difficult to conduct online during the COVID-19 crisis. Technique used: Created an online learning system featuring exercises, review tools, progress tracking, and portfolios. fluture work: Expand the platform to more subjects and include advanced analytics for large-scale online education

Proposed System

Problem Statement

In the current educational and professional landscape, existing student networking and learning platforms are largely fragmented and lack intelligence, focusing primarily on generic profiles rather than practical skills. Students face difficulties in identifying peers with complementary abilities, accessing relevant projects, and receiving personalized guidance. Moreover, the absence of integrated collaboration tools, skill validation mechanisms, and data-driven career support limits effective learning and employability. There is a critical need for a unified, AI-driven system that enables skill-based networking, intelligent recommendations, real-time collaboration, and career guidance, bridging the gap between academic knowledge and industry-ready competencies.

System Architecture

Here in this section we have cover the detailed information of proposed system. Here we will see objectives of proposed system along with architecture, hardware and software requirements, applications.

Architecture

Following Figure represents Architecture of our proposed system

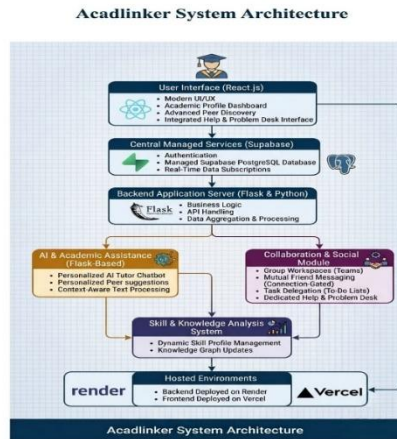


Fig. 2. Acadlinker System Architecture

Architecture Description

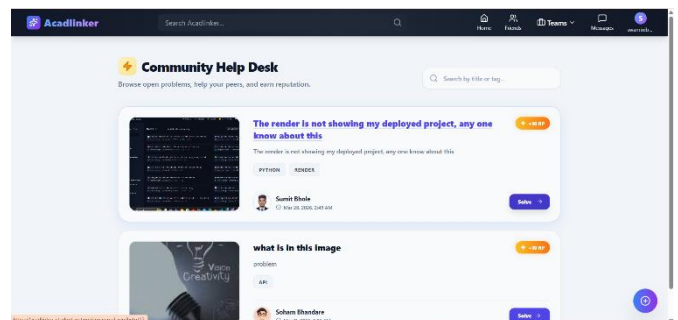
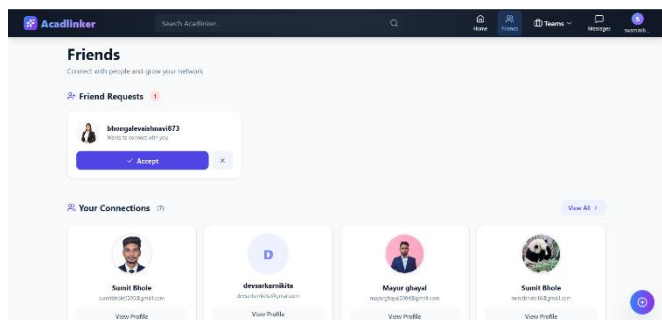
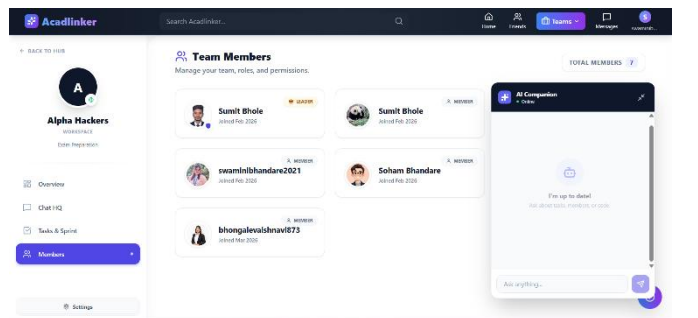
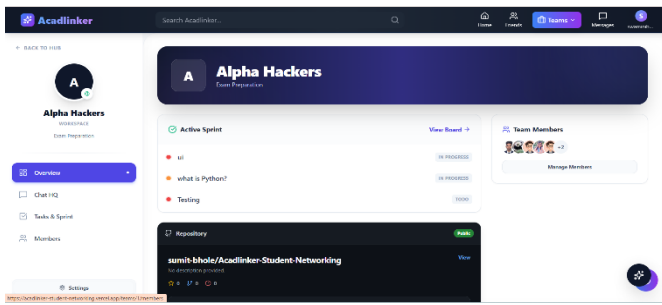
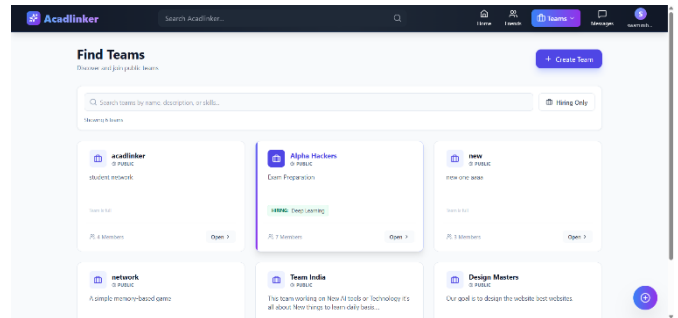
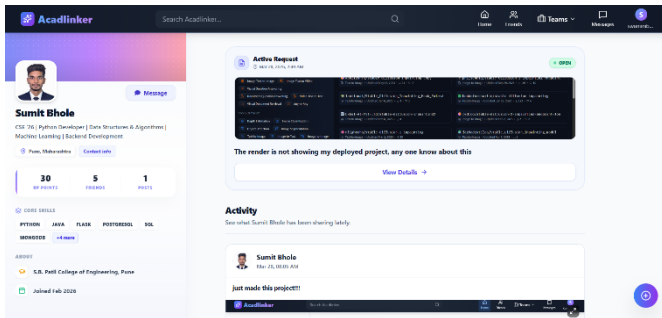
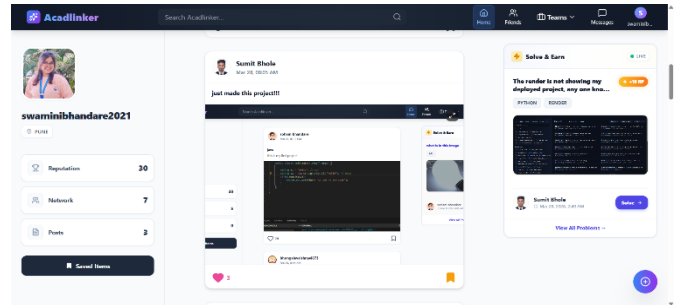
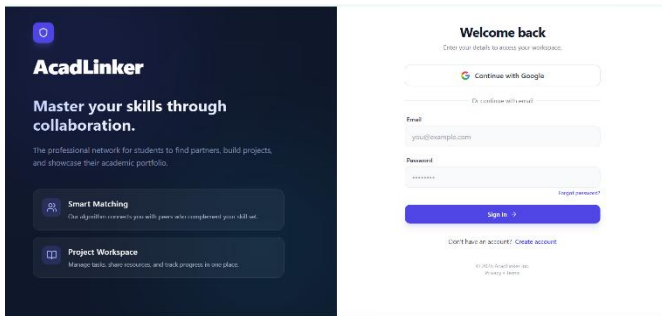
AcadLinker architecture is designed as a modular system that enables efficient data integration, processing, and intelligent linking of entities from multiple sources. The architecture begins with the data acquisition layer, where structured and unstructured data is collected from databases, APIs, documents, and real-time streams. This data is then passed to the preprocessing layer, which performs cleaning, normalization, and transformation using techniques such as parsing and natural language processing. The core component of the system is the linking engine, which identifies relationships between entities, performs entity resolution, and establishes meaningful connections using rule-based and machine learning approaches. Once the data is linked, it is stored in a knowledge representation layer, typically in the form of graph databases or knowledge graphs, allowing efficient querying and relationship mapping. The processing and analytics layer further analyzes the linked data to discover patterns, generate insights, and provide recommendations. An API and integration layer enables communication with external applications and systems, ensuring interoperability. Additionally, a user interface layer may be included to provide visualization tools and dashboards for easy interaction with the data. Finally, the architecture incorporates a security and governance layer to ensure data protection, access control, and system reliability. Overall, AcadLinker architecture is scalable, flexible, and designed to handle complex data linking tasks efficiently.

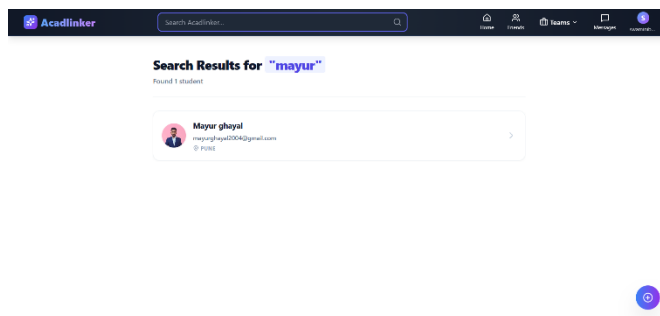
Work Flow of System

A Skill-Based Student Network is a platform designed to connect students based on their skills, interests, and learning goals rather than only academic qualifications. The system allows students to create profiles where they can showcase their abilities, projects, certifications, and areas of expertise. Based on this information, the platform intelligently links students with similar or complementary skills, enabling collaboration, peer learning, and knowledge sharing. The network also helps students discover opportunities such as internships, projects, competitions, and mentorships by matching their skills with relevant requirements. Additionally, it may include features like skill endorsements, discussion forums, and project collaboration spaces to enhance interaction among users. By focusing on practical skills, the platform encourages real-world learning, teamwork, and professional growth. Overall, a Skill-Based Student Network bridges the gap between education and industry by helping students connect, collaborate, and grow based on their capabilities.

Result Discussion

Here this section covers the result of implemented project.





Conclusion

In this paper, we have presented AcadLinker, a comprehensive, AI-driven, skill-based student networking platform designed to address the limitations of traditional educational and networking systems. The platform integrates skill-oriented profiling, AI-powered recommendations, collaborative tools, skill validation, and career guidance into a unified ecosystem, providing a holistic solution for student development. The implementation results demonstrate that AcadLinker effectively enhances student engagement, promotes meaningful collaborations, and facilitates practical learning through personalized project and peer suggestions. Skill validation and performance analytics ensure credibility and allow students to monitor their growth, while integrated collaboration tools streamline teamwork and project management. Moreover, AI-driven career guidance bridges the gap between academic knowledge and industry requirements, improving employability and preparing students for real-world challenges. Overall, AcadLinker establishes a dynamic, student-centric, and intelligent environment that empowers learners to develop practical skills, collaborate effectively, and achieve career readiness. The system highlights the potential of combining artificial intelligence with skill-based networking to create an innovative platform that addresses the evolving needs of modern students. Future work may focus on enhancing predictive analytics, expanding industry integration, and incorporating adaptive learning modules to further optimize student outcomes..

REFERENCES

1. Eric Araka; Robert Oboko; Elizaphan Maina; Rhoda Gitonga(2022) : Using Educational Data Mining Techniques to Identify Profiles in Self-Regulated Learning: An Empirical Evaluation
2. Zarina M. Noh; Norhidayah M. Yatim; Wira H. M. Saad(2024) : Analysis of Student Engagement Towards Learning Materials in LMS: A Case StudyAuthors
3. H. A. P. M. Sirithunga; B. G. S. Deshan; P. H. D. Siger(2022): Peer Learning – An Interactive and Collaborative E-Learning Application for College Students.
4. Eric Araka; Robert Oboko; Elizaphan Maina; Rhoda K. Gitonga(2021): A Conceptual Educational Data Mining Model for Supporting Self-Regulated Learning in Online Learning Environments
5. Nalawade, V. S., Jagtap, T. G., Jamdar, P. B., Kadam, S. I., & Kenjale, R. S. (2023). Voice-Enabled Traffic Sign Recognition and Alert System using ML: A Review.
6. Sparsh Amarnani, Neel Bha- gat, Hritwik Ekade(2022): A Complete Chatbot based Architecture for answering user's Course-related queries in MOOC platforms
7. Lee & Yeung (2019) — Knowledge Query Network: How Knowledge Interacts with Skills Neural network model mapping student knowledge and skill vectors with interpretability via probabilistic skill similarity. arXiv
8. Minn et al. (2021) — Interpretable Knowledge Tracing: Simple and Efficient Student Modeling with Causal Relations Uses Tree-Augmented Naive Bayes for interpretable student skill mastery and performance forecasting. arXiv
9. Bai & Stede (2023) — A Survey of Current Machine Learning Approaches to Student Free-Text Evaluation for Intelligent Tutoring Comprehensive review of ML/DL methods for automatically assessing student free-text responses. SpringerLink
10. Albreiki, Zaki & Alashwal — A Systematic Literature Review of Student Performance Prediction Using Machine Learning Techniques Survey of ML models for predicting student performance. MDPI
11. Benteux & Chichekian (2022) — The Potential of Learning With (and Not From) Artificial Intelligence in Education Explores shifts toward students learning alongside AI, rather than just from it. Frontiers
12. Wang & Liu (2021) — Using Artificial Intelligence-Based Collaborative Teaching in Media Learning Discusses AI-enabled collaborative teaching strategies. Frontiers
13. Nalawade, V. S., Sanjay, B. N., Nanasheh, M. P., Vikram, S. V., & Khandeshwar, P. T. (2024). Survey on Phishing Attack Prevention Techniques Across Multiple Applications: Current Strategies, Challenges, and Future Trends. International Journal of Electrical, Electronics and Computer Systems, 13(2), 29-35.
14. Ouyang & Jiao (2021) — Student-AI Collaboration Model (SAC) Framework highlighting student-AI-teacher interactions,

- emphasizing student agency in learning. SpringerLink
15. Krause, Dalvi & Zaidi (2025) — Generative AI in Education: Student Skills and Lecturer Roles Mixed-method study identifying key student competencies for effective GenAI use and lecturer strategies. arXiv
 16. Nalawade, V. S., Aoute, Y. P., Dharurkar, A. S., & Gunavare, R. D. (2023). A Survey on Revolutionizing Document Security: A Comprehensive Deep Learning Approach For Signature Detection and Verification.
 17. Zheng et al. (2024) — Charting the Future of AI in Project-Based Learning: A Co-Design Exploration with Students Co-design study exploring students' AI usage in project-based learning and assessment. arXiv
 18. Wikipedia: Social Learning Network — Social Learning Network (SLN) Conceptual overview of networks where learners both teach and learn collaboratively—foundation for skill-based peer networks. Wikipedia
 19. Lin, Y., Chen, H., Xia, W., Lin, F., Wang, Z., & Liu, Y. (2023/24). A Comprehensive Survey on Deep Learning Techniques in Educational Data Mining. Covers DL models in knowledge tracing, performance prediction, behavior detection, personalized recommendation. Astrophysics Data System.
 20. Nalawade, V. S., Jadhav, O. D., Jadhav, R. M., Kargal, S. R., & Panhalkar, N. S. (2023). A Survey On Creating Digital Health Ecosystem with Lifewellness Portal Including Hospital and Insurance Company with Cloud Computing and Artificial Intelligence.
 21. Romero, C., & Ventura, S. (2024). Educational Data Mining and Learning Analytics: An Updated Survey. Reviews trends, tools, datasets, and analytics methods in EDM and LA over the past decade. Emergent Mind.
 22. Kalita, E., Oyelere, S. S., Gaftandzhieva, S., et al. (2025). Educational Data Mining: A 10-Year Review. Looks at multimodal analytics, explainability, and AI in education over the past ten years. SpringerLink.
 23. Nalawade, V. S., Shinde, S. S., Takmoge, P. D., Shirsat, S. P., & Wagh, S. B. (2025). Result Paper On “Mobile Theft-Prevention System”. International Journal on Advanced Computer Theory and Engineering, 14(1), 457-464.
 24. Mustafa Yağcı et al. (2022). Prediction of Students' Academic Performance Using Machine Learning Algorithms. Comparing ML models (RF, SVM, etc.) for predicting final exam grades using midterm data. SpringerOpen.
 25. Songlin Xu & Xinyu Zhang (2023). Leveraging Generative Artificial Intelligence to Simulate Student Learning Behavior. LLM-based virtual student simulations to probe learning outcomes and engagement patterns. arXiv.
 26. Thanveer Shaik, Xiaohui Tao, Christopher Dann, Haoran Xie, Yan Li & Linda Galligan (2023). Sentiment Analysis and Opinion Mining on Educational Data: A Survey. Insights on using NLP methods to capture student sentiment from feedback for pedagogy and evaluation. arXiv.
 27. Kim, H. K., Roknaldin, A., Nayak, S. P., Zhang, X., Twyman, M., Hwang, A. H., & Lu, S. (2024). Empowering Computer-Supported Collaborative Learning with ChatGPT: Investigating Effects on Student Interactions. Analyses how integrating ChatGPT shifts interaction patterns in collaborative settings. ASEE Strategy.
 28. Nalawade, V. S., Sharad, S. S., Dhananjay, T. P., Popat, S. S., & Baban, W. S. (2024). A Comprehensive Survey on Mobile Theft Prevention Systems: Innovations and Approaches for Enhanced Security. International Journal of Electrical, Electronics and Computer Systems, 13(2), 56-61.
 29. Claire Li, Xiangping Du & Perry Xiao (2024). Revolutionising Education: Leveraging AI to Boost Student Engagement through Constructivist and Social Collaborative Learning – A Study of Perusall. Empirical work showing improved engagement & performance via peer annotations + social reading tools. AISel.
 30. Frontiers (2025). From Experience to Engagement: A Mixed Methods Exploration of Learning Environments using Artificial Intelligence and Extended Reality. Compares traditional, AI, XR, and AI-XR environments on cognitive, emotional, behavioral, social engagement among high school students. Frontiers.