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**Skill Swap: Adaptive Peer-to-Peer Learning for Smart
Manufacturing**Vijitha.S¹, Keerthana², Poojamanoharan³, Rajadharshini⁴*Department of CSE Artificial Intelligence and Data Science, Vels Institute of Science,
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ABSTRACT

The accelerating demand for multidisciplinary expertise has highlighted critical gaps between learners' capabilities and industry requirements, particularly in engineering domains. To address this, we propose SkillSwap, an AI-augmented peer-to-peer skill exchange ecosystem that enables structured, equitable, and verifiable knowledge sharing through a credit-based marketplace. Built with cross-platform frameworks (React Native/Flutter), scalable backends (Node.js/Django), real-time data management (Firebase/MongoDB), and Python-based AI for intelligent recommendations, the system ensures adaptive and trusted upskilling. In the context of mechanical engineering, SkillSwap provides structured peer learning in CAD/CAM, robotics, thermal systems, computational fluid dynamics, sustainable manufacturing, and Industry 4.0 applications, thereby bridging academic knowledge with industrial requirements. By embedding verification, equity, and gamified engagement, SkillSwap offers a scalable innovation that redefines peer learning while strengthening workforce readiness and competency development across mechanical and allied engineering disciplines.

Keywords: AI-Augmented Learning, Peer-to-Peer Skill Exchange, Digital Skill Wallet, Gamified Up skilling, Workforce Readiness, CAD/CAM, Robotics, Computational Fluid Dynamics (CFD), Sustainable Manufacturing, Industry 4.0.



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