

Batch Number	CB5
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Guide	Dr. S.V.N.Sreenivasu, M.Tech., Ph.D., DEAN R&D, Professor
Title	Expert-Agnostic AI for Intelligent Tutoring Systems: Leveraging Self-Supervised Knowledge Mining
Domain/Technology	DEEP LEARNING
Base Paper Link	https://machineintelligenceresearchhttps://machineintelligenceresearchs.com/index.php/mir/article/view/212hs.com/index.php/mir/article/view/212
Dataset Link	http://bit.ly/ednet-kt4
Software Requirements	Browser: Any latest browser like Chrome Operating System: Windows 7 Server or later Python (COLAB)
Hardware Requirements	SystemType: Intel Core i5 or above RAM: 8 GB Number of cores: 5 Number of Threads: 4
Abstract	Expert-tailored annotations and domain-specific rules are usually unavoidable in traditional Intelligent Tutoring Systems (ITS), restricting scalability and flexibility. This paper presents a new expert-agnostic approach to intelligent tutoring based on self-supervised learning to promote more personalized education without depending on domain experts. We develop and evaluate multiple deep learning models—GRU, BiLSTM, LSTM, CNN, Transformer, MLP, and hybrid Embedded GRU CNN—trained on student interaction datasets using automatic representation learning techniques. Our approach leverages the sequential nature of learning behaviors and embeds contextualized features to identify optimal learning interventions. Among the tested architectures, Embedded GRU-CNN and BiLSTM, CNN models demonstrated superior accuracy (up to 99%) in predicting learner needs and engagement levels. The findings demonstrate substantial student modelling performance improvement without hand-crafted labels, affirming the promise of self-supervised methods in ITS. The work opens up to scalable, domain agnostic intelligent tutoring systems that can adapt and provide feedback in real time, a step toward democratizing AI-facilitated education for multiple types of learners.

Signature of the student(s)

Signature of the Guide

Signature of the project coordinator

