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Preface

AI is revolutionizing the way we learn, work, and acquire new skills. With its ability to process and analyze vast amounts of data, automatically generate content, and provide intelligent tutoring support, AI is helping educators and trainers develop and deliver personalized, effective, and engaging learning experiences. These proceedings explore how AI can be used to support learning in novel ways, with an emphasis on *Guided Experiential Learning* (GEL), a pedagogical approach in which skills are trained using combination of drill and practice in real-world or simulated real-world conditions. The goal of GEL is to induce skill acquisition as learners progress from being untrained novices to becoming experts. The papers in these proceedings include examples of existing systems that implement GEL as well as a more general discussions of drill versus practice, standards, and implementation challenges, and applications in more traditional educational settings that can inform the development of AI-enabled GEL systems in the future.

- In the paper *Instructional quality guideline for VR-based learning platform*, Dr. Vedant Bahel asks whether gamification maintains affects the quality of learning and studies the pedagogical quality of a non-immersive 2D VR system based on David Merrill's First Principles of Learning.
- In the paper *Coaching AI to be a Team Player*, Dr. Tomlinson and his colleagues introduce the notion of an "AI marking Engine" (AIME) that functions as a member of a team of teaching assistants marking grading in American English) math papers. The paper discusses how an AIME can be trained and how it fits into the marking workflow and proposes a case study based on an existing AIME called Graide that is currently in the beta stage of development.
- In the paper *A Writing Support System that Scaffolds Language Learners via Autocompletion with Difficulty Prediction*, Dr. Ehara proposes a writing support system for English as a Second Language learners that uses a personalized classifier and a masked language model (BERT) to give learners a choice of expressions that complete a sentence.
- In the paper *The Standards Landscape for AI-based Guided Experiential Learning*, Dr. Robson uses the STE Experiential Learning – Readiness (STEEL-R) project as a platform to discuss IEEE, 1EdTech, ISO/IEC JTC1 SC36, W3C, and other technical standards relevant to learning systems and how they might be modified or enhanced to support AI-based Guided Experiential Learning.
- In the paper *Drill-Practice-Repeat: Experiential Scaffolds*, Dr. Goldberg discusses the skill and competency acquisition curve in the progressions from novice to expert, examines the roles of drill versus practice in GEL, and proposes a reinforcement learning (RL) algorithm that computes how much exploration and exploitation of skills is appropriate for a given learner at a given stage.
- In the paper *Towards a Multimodal Data-driven Framework for Adaptive Coaching in Collective Simulation-Based Training,* Dr. Smith and his colleagues discuss an adaptive coaching framework that uses trainee interaction data from a synthetic team training environment and data generated from trainee verbal communications to support team coaching.
- In the paper *Predicting Student Behavior Models in Ill-structured Problem-Solving Environment*, Dr. Patil uses log data from an online learning system called Fathom that teaches problem solving skills in a software design course to build student models of the low, medium, and high performers.
- In the paper *Employing Artificial Intelligence to Increase Occupational Tacit-Knowledge Through Competency-Based Experiential Learning*, Mr. Owens discusses the STEEL-R project, its strategy, its experience design tool (XDT), how generative AI might be integrated into the XDT, and how these can be used to train tacit knowledge.
- In the paper *A Theoretical Framework for Multimodal Learner Modeling and Performance Analysis in Experiential Learning Environments,* Dr. Vatral and his colleagues combine cognitive task analysis with a qualitative distributed cognition analysis of learner data, apply Bayesian inferencing to generate insights about learner cognition, and map these to performance metrics that can be evaluated over time.

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