

2025 IEEE Digital Education and MOOCS Conference (DEMOcon 2025)

**Boca Raton, Florida, USA
5-7 October 2025**

IEEE Catalog Number:
ISBN:

CFP25VM3-POD
979-8-3315-2680-1



Copyright © 2025, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP25VM3-POD
ISBN (Print-On-Demand):	979-8-3315-2680-1
ISBN (Online):	979-8-3315-2679-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA

Phone:	(845) 758-0400
Fax:	(845) 758-2633
E-mail:	curran@proceedings.com
Web:	www.proceedings.com

TABLE OF CONTENTS

MOOC Oriented Activities: Innovate over the Years in Online Learning	1
<i>Manuel Castro, Elio Sancristobal, Felix Garcia Loro, Sergio Martin, Russ Meier</i>	
Enhancing User Experience in Digital Libraries: Evaluating Content-Based Recommender Systems for Academic Libraries	7
<i>Pavol Batalik, Akos Levardy, Jakub Dubec, Jan Lang</i>	
Automated Determination of Online Course Difficulty Levels with LLMs - A case study	14
<i>Max Thomas, Sourav Dutta, Christoph Meinel</i>	
Rethinking Retrieval Practice with AI: A GPT-Based Approach for Introductory Programming	20
<i>Mohamed Elhayany, Christoph Meinel</i>	
Enhancing Microcredential Design through Agentic Artificial Intelligence	27
<i>Rebiha Kemcha, Carlos Alario-Hoyos, Carlos Delgado Kloos</i>	
Personalized learning support	33
<i>Oliver Udvardi, Matus Sikula, Pavol Batalik, Jan Lang</i>	
Human-in-the-Loop AI Skill Mapping: a Mixed-Methods Case Study	39
<i>Erin R. Hoffman, Ye Li, Sofia Lemons, Kamran Pakseresht, Rebecca Coutts</i>	
Teachers' Framework in Assessing Quality of MOOCs	45
<i>Ebru Burcu, Nivedita Viswanathan, Anum Masood</i>	
Digital Twin of Self-Regulated Learners: Effects of Metacognition, Feedback, and Task Complexity	51
<i>Gayane Grigoryan, Meryem Yilmaz Soylu, Jeonghyun Lee, Eric Sembrat, Stephen Harmon</i>	
Perceptions and Progress: a Comparative Study of Faculty Perspectives on Artificial Intelligence Integration in Higher Education	57
<i>Miguel Morales Chan, Milvia Rosales, Byron Linares, Rocael Hernandez-Rizzardini Hector R. Amado-Salvatierra</i>	
Explaining Student Success in Education: Shapley-Shubik Method for Interpreting Feature Contributions	63
<i>Gayane Grigoryan, Jeonghyun Lee, Meryem Yilmaz Soylu, Aditi Patel</i>	
Leveraging Large Language Models to Detect and Summarize Cognitive Presence in Online Discussion Forums	69
<i>Jeonghyun Lee, Gayane Grigoryan, Rushil Desai, Adrian J Gallard, Meryem Yilmaz Soylu</i>	
Remote Educational Environment through MOOC for Industrial Automation and RAMI 4.0 Integration using Digital Twins in Colombia	75
<i>Hernán Roldán Albis, Diego Vergara Hortua, Luis Alberto Cruz Salazar, Ernesto Monroy Cruz Maria Mercedes Larrondo-Petrie, Sergio Martín-Gutierrez, Libis Valdez-Cervantes Juan Sebastián Sánchez-Gómez</i>	
Recent Results of Machine Learning in Predicting Student Performance: A Systematic Literature Review	81
<i>Sandamini Neththikumara, M. W. P. Maduranga</i>	

Designing VR Learning Scenarios with AI-Enabled Avatars for Business Education	86
<i>Mark Frydenberg, Silke Plesch, Alessia Dalsant</i>	
Accelerating Innovation-Based Learning with Low-Cost Hardware for Full-Stack IoT Development	92
<i>Nethshan M. Narasinghe, Sandamini Neththikumara, Collins P. Obeng, Ryan Striker, M W P Maduranga</i> <i>Enrique Alvarez Vazquez</i>	
Enhancing Educational Content Through AI-Assisted Transformation of Video Transcriptions	98
<i>Ignacio Despujol Zabala, Carlos Turró Ribalta, Jaime Busquets Mataix</i>	
Exploring the Effects of Adaptive Testing Innovations on Distance STEM Education for Adult Learners: A Systematic Review	104
<i>Anwar Al-Abbass, Georgy Loriya, Jason Stidd, Thomas Trask, Nicholas Lytle</i>	
Using generative AI to track emotional cues and identify team development stages in student projects	110
<i>Yeray Barrios-Fleitas, Gabriel Lasconi, Carina González-González, Arend Rensink</i>	
Learning Modes and Student Attainment: A Case Study on Learner Perspectives and Engagement in Higher Education	116
<i>Yue Chen, Kok Keong Chai, Jonathan Loo</i>	
MENTOR-CS: Management Education for Navigating Transdisciplinary Online Research in Computer Science	122
<i>Breanna Shi, Maryam Berijanian, Charles R. Clark, Thomas Deatherage, Ilia Jahanshahi</i> <i>Ichha Manandhar, Quinn Mattison, Kailey Cozart Quesada, Jeanette Schofield, Stephanie Selvick</i> <i>Grigori Yourganov, Nicholas Lytle</i>	
Successful Practices for Avatars in Virtual World Learning: Perspectives from Experienced Educators	128
<i>Arghavan Nova Ebrahimi, Harini Ramaprasad</i>	
The Digital Sidewalk: Indirect Learning and Entertainment-Education in Decentralized Communities	135
<i>Darby Bailey McDonough, William J. Brown</i>	
Advantages of Virtual Worlds versus Video Conferencing Platforms for Online Education: A Comparative Study	141
<i>Arghavan Nova Ebrahimi, Harini Ramaprasad</i>	
Student Experiences in Online Learning Environments: A Comparative Study of Virtual Worlds and Video Conferencing Platforms	148
<i>Arghavan Nova Ebrahimi, Harini Ramaprasad</i>	
Scaffolding Online Capstone Courses for Improving Data Science Education via Comparative Analysis of Online and In-person Capstone Courses	155
<i>Xinjie Lan</i>	
Educational Transformation through Virtual Reality: Improving Understanding of the Integration of Chemical and Biochemical Processes in Tequila Production	161
<i>Dariana Graciela Rodriguez-Sanchez, Raul Villarreal-Lara, Laura Eugenia Romero-Robles</i> <i>Jackeline Iturbe Ek</i>	
Learner Models: Requirements Analysis for Application in Adaptive Learning Environments and Recommendation Systems	167
<i>Felix Böck</i>	

Profile, Path, Performance: Predictors of Early Program Retention in an At-Scale Graduate Degree	174
<i>David A. Joyner, Alex S. Duncan, Ana Mary Rusch</i>	
When Should We Meet? Automating Team Formation for Synchronous Projects in Online Education	180
<i>Yeray Barrios-Fleitas, Eduardo Lalla-Ruiz</i>	
Bibliometric Trends in Virtual Education on Microbial Fuel Cells: Analysis of MOOCs and Their Impact on Sustainable Energy Teaching	186
<i>Segundo Rojas-Flores, Magaly de La Cruz Noriega, Luis Cabanillas-Chirinos, Nelida Milly Otiniano</i>	
Optimizing Document Retrieval in Digital Learning Through Multi-Strategy Chunking and Hybrid Relevance Scoring	192
<i>Kanak Tiwari, Anirban Roy Chowdhury, Lee Allison</i>	
WIP: A Learner-Centered Approach to Online Educational Resource Discovery Leveraging Generative AI	198
<i>Ferdi Alimadhi, Simone Ovsey, Peter Pinch, Jessica Sandland, Mary Ellen Wiltrout</i>	
Implementation of an Authoring Tool for Online Laboratories	202
<i>Harry Vecchio-Ferrer, Elizabeth Jijon, Maria Larrondo-Petrie, C. Perry Weinthal</i>	
Public Perceptions and Communications of a Large Online Graduate Program	208
<i>Erik W. W. Goh, Xuan Wang, David A. Joyner, Ana Mary Rusch</i>	
Integrating RFID and xAPI to Secure Online Laboratory Systems	214
<i>Luis Felipe Zapata-Rivera, Catalina Aranzazu-Suescun, Michael Stalford</i>	
Open Online Laboratory Management System to Promote Standard Practices	220
<i>Luis Felipe Zapata-Rivera, Catalina Aranzazu-Suescun, Hamadou Saliah-Hassane, Maria Larrondo-Petrie</i>	
Evolution and Trends in Teaching Biopolymers Through MOOCs and Virtual Education: a Bibliometric Analysis	223
<i>Magaly de La Cruz Noriega, Waldo Salvatierra-Espinola, Luis Cabanillas-Chirinos Moises Gallozzo Cárdenas, Karol Mendoza-Villanueva</i>	
Implementing a Secure Equipment Loan System for High-Value Educational Lab Kits	229
<i>C. Perry Weinthal, Aaron Hancock, Stephen Whelpley, Colin Peterson, Joshua Thaw, Victor Do Prado Sophia Guilarte, Joshua Louzada, Harry Vecchio Ferrer, Elizabeth Jijon</i>	
Leveraging AI Development Tools to Accelerate Learning, UI Implementation, and Educational Support in Mobile and Web Application Development	235
<i>Perry Weinthal, David Jaramillo, Alexandro Galvez-Vega, Alonzo Velez, Joshua Thaw</i>	
Digital Design Interactive Real-Time Color Theory Application in Digital Education	241
<i>Ana-Maria-Andreea Căiniceanu, Muguraș Daniel Mocofan, Diana Andone</i>	
Developing Intelligent Tutors with Artificial Intelligence for Digital Education	247
<i>Valentin-Petru Sorescu, Diana Andone</i>	