

# 16<sup>th</sup> International Conference on Educational Data Mining

July 11-14, 2023, Bengaluru India

## List of Accepted Papers

**Warm Congratulations to All Authors!**

### Long Papers

- **Aaron Haim, Robert Gyurcsan, Chris Baxter, Stacy Shaw and Neil Heffernan** - How to Open Science: Debugging Reproducibility within the Educational Data Mining Conference
- **Afrizal Doewes, Nughthoh Arfawi Kurdhi and Akrati Saxena** - Evaluating Quadratic Weighted Kappa as the Standard Performance Metric for Automated Essay Scoring.
- **Antonette Shibani, Ratnavel Rajalakshmi, Faerie Mattins, Srivarshan Selvaraj and Simon Knight** - Visual representation of co-authorship with GPT-3: Studying human-machine interaction for effective writing.
- **Anup Shakya, Vasile Rus and Deepak Venugopal** - Scalable and Equitable Math Problem Solving Strategy Prediction in Big Educational Data.
- **Boxuan Ma, Gayan Prasad Hettiarachchi, Sora Fukui and Yuji Ando** - Exploring the effectiveness of Vocabulary Proficiency Diagnosis Using Linguistic Concept and Skill Modeling.
- **Hagit Gabbay and Anat Cohen** - Unfolding Learners' Response to Different Versions of Automated Feedback in a MOOC for Programming – A Sequence Analysis Approach.
- **Hamid Karimi, Kaitlin Torphy Knake and Kenneth A. Frank** - An Analysis of Diffusion of Teacher-curated Resources on Pinterest.
- **Harshita Chopra, Yiwen Lin, Mohammad Amin Samadi, Jacqueline G. Cavazos, Renzhe Yu, Spencer Jaquay and Nia Nixon** - Semantic Topic Chains for Modeling Temporality of Themes in Online Student Discussion Forums.
- **Husni Almoubayyed, Stephen Fancsali and Steve Ritter** - Generalizing Predictive Models of Reading Ability in Adaptive Mathematics Software.
- **Janine Langebein, Till Massing, Jens Klenke, Natalie Reckmann, Michael Striewe, Michael Goedicke and Christoph Hanck** - A Data Mining Approach for Detecting Collusion in Unproctored Online Exams.

- **Jauwairia Nasir, Aditi Kothiyal, Haoyu Sheng and Pierre Dillenbourg** - To speak or not to speak, and what to speak, when doing task actions collaboratively.
- **Kerstin Wagner, Agathe Merceron, Petra Sauer and Niels Pinkwart** - Can the Paths of Successful Students Help Other Students With Their Course Enrollments?
- **Lea Cohausz, Andrej Tschalzev, Christian Bartelt and Heiner Stuckenschmidt** - Investigating the Importance of Demographic Features for EDM-Predictions.
- **Mélina Verger, Sébastien Lallé, François Bouchet and Vanda Luengo** - Is Your Model "MADD"? A Novel Metric to Evaluate Algorithmic Fairness for Predictive Student Models.
- **Muntasir Hoq, Peter Brusilovsky and Bitu Akram** - Analysis of an Explainable Student Performance Prediction Model in an Introductory Programming Course.
- **Philip I. Pavlik Jr. and Luke G. Eglington** - Automated Search for Logistic Knowledge Tracing Models.
- **Preya Shabrina, Behrooz Mostafavi, Sutapa Dey Tithi, Min Chi and Tiffany Barnes** - Learning Problem Decomposition-Recomposition with Data-driven Chunky Parsons Problem within an Intelligent Logic Tutor.
- **Yang Shi, Robin Schmucker, Min Chi, Tiffany Barnes and Thomas Price** - KC-Finder: Automated Knowledge Component Discovery for Programming Problems.

## Short Papers

- **Amir Zur, Isaac Applebaum, Jocelyn Nardo, Dory DeWeese, Sameer Sundrani and Shima Salehi** - Meta-Learning for Better Learning: Using Meta-Learning Methods to Automatically Label Exam Questions with Detailed Learning Objectives.
- **Amruth Kumar** - Using Markov Matrix to Analyze Students' Strategies for Solving Parsons Puzzles.
- **Ayaz Karimov, Mirka Saarela and Tommi Kärkkäinen** - Clustering to define interview participants for analyzing student feedback: a case of Legends of Learning.
- **Ethan Prihar, Kirk Vanacore, Adam Sales and Neil Heffernan** - Effective Evaluation of Online Learning Interventions with Surrogate Measures.
- **Jean Vassoyan, Jill-Jênn Vie and Pirmin Lemberger** - Towards Scalable Adaptive Learning with Graph Neural Networks and Reinforcement Learning
- **Machi Shimmei and Noboru Matsuda** - Can't Inflate Data? Let the Models Unite and Vote: Data-agnostic Method to Avoid Overfit with Small Data.
- **Md Akib Zabed Khan and Agoritsa Polyzou** - Session-based Course Recommendation Frameworks using Deep Learning.
- **Mengxue Zhang, Neil Heffernan and Andrew Lan** - Modeling and Analyzing Scorer Preferences in Short-Answer Math Questions.
- **Morgan P Lee, Ethan Croteau, Ashish Gurung, Anthony F. Botelho and Neil T. Heffernan** - Knowledge Tracing Over Time: A Longitudinal Analysis.
- **Narjes Rohani, Kobi Gal, Michael Gallagher and Areti Manataki** - Early Prediction of Student Performance in a Health Data Science MOOC.
- **Regina Kasakowskij, Joerg M. Haake and Niels Seidel** - Self-Assessment Task Processing Behavior of Students in Higher Education.
- **Sami Baral, Anthony F. Botelho, Abhishek Santhanam, Ashish Gurung, Li Cheng and Neil Heffernan** - Auto-scoring Student Responses with Images in Mathematics.
- **Stav Tsabari, Avi Segal and Kobi Gal** - Predicting Bug Fix Time in Students' Programming with Deep Language Models.
- **Stephen Hutt, Sanchari Das and Ryan Baker** - The Right To Be Forgotten and Educational Data Mining: Challenges and Paths Forward.
- **Tianze Shou, Conrad Borchers, Shamyia Karumbaiah and Vincent Aleven** - Optimizing Parameters for Accurate Position Data Mining in Diverse Classrooms Layouts.

- **Tung Phung, José Cambronero, Sumit Gulwani, Tobias Kohn, Rupak Majumdar, Adish Singla and Gustavo Soares** - Generating High-Precision Feedback for Programming Syntax Errors using Large Language Models.
- **Valdemar Švábenský, Ryan S. Baker, Andrés Zambrano, Yishan Zou and Stefan Slater** - Towards Generalizable Detection of Urgency of Discussion Forum Posts.
- **Vishal Kuvar, Lauren Flynn, Laura Allen and Caitlin Mills** - Partner Keystrokes can Predict Attentional States during Chat-based Conversations.
- **Wei Chu and Philip I. Pavlik Jr.** - The Predictiveness of PFA is Improved by Incorporating the Learner's Correct Response Time Fluctuation.
- **Yinuo Xu and Zach Pardos** - Mining Detailed Course Transaction Records for Semantic Information.
- **Yunsung Kim, Sree Sankaranarayanan, Chris Piech and Candace Thille** - Variational Temporal IRT: Fast, Accurate, and Explainable Inference of Dynamic Learner Proficiency.
- **Zilin Dai, Andrew McReynolds and Jacob Whitehill** - In Search of Negative Moments: Multi-Modal Analysis of Teacher Negativity in Classroom Observation Videos.

## Posters

- **Anan Schütt, Tobias Huber, Ilhan Aslan and Elisabeth André** - Fast Dynamic Difficulty Adjustment for Intelligent Tutoring Systems with Small Datasets.
- **Anirban Roy Chowdhury, Nandagopal K S, Vijay Prakash and Syaamantak Das** - A comparative analysis of the cognitive levels of Science and Mathematics secondary school board examination questions in India.
- **Antonette Shibani, Ratnavel Rajalakshmi, Srivarshan Selvaraj, Faerie Mattins and Dhivya Chinnappa** - Explainable models for feedback design: An argumentative writing example.
- **Ayaz Karimov, Mirka Saarela and Tommi Kärkkäinen** - Improving learning in under-resourced communities by using online educational platforms: the case of Khan Academy.
- **Brad Din, Yael Feldman-Maggor, Tanya Nazaretsky and Giora Alexandron** - Automated Identification and Validation of the Optimal Number of Knowledge Profiles in Student Response Data.
- **Colton Botta, Avi Segal and Kobi Gal** - Sequencing Educational Content Using Diversity Aware Bandits.
- **Conrad Borchers, Lennart Klein, Hayden Johnson and Christian Fischer** - Timing Matters: Inferring Educational Twitter Community Switching from Membership Characteristics.
- **Deliang Wang, Dapeng Shan, Yaqian Zheng, Kai Guo, Gaowei Chen and Yu Lu** - Can ChatGPT Detect Student Talk Moves in Classroom Discourse? A Preliminary Comparison with Bert.
- **Erwin Daniel López Zapata, Tsubasa Minematsu, Yuta Taniguchi, Fumiya Okubo and Atsushi Shimada** - LECTOR: An attention-based model to quantify e-book lecture slides and topics relationships.
- **Gyanesh Jain, Aditya Sharma, Nirmal Patel and Amit Nanavati** - Tool Usage and Efficiency in an Online Test.
- **Ikenna Osakwe** - Using reinforcement learning for automatic detection of effective strategies for self-regulated learning.
- **Luca Mouchel, Thiemo Wambsganss, Paola Mejia and Tanja Käser** - Understanding Revision Behavior in Adaptive Writing Support Systems for Education.
- **M Parvez Rashid, Divyang Doshi, Edward F. Gehringer, Sai Venkata Vinay Kumar Samudrala and Qinjin Jia** - "Can we reach agreement?": A context- and semantic-based clustering approach with semi-supervised text-feature extraction for finding disagreement in peer-assessment formative feedback.

- **Mayank Sahu, Daevesh Singh, Deepak Pathak, Chandan Dasgupta and Ramkumar Rajendran** - Boredom and Frustration detection in TELE for Engineering Design Problem.
- **Nischal Ashok Kumar, Wanyong Feng, Jaewook Lee, Hunter McNichols, Aritra Ghosh and Andrew Lan** - A Conceptual Model for End-to-End Causal Discovery in Knowledge Tracing.
- **Olivier Allègre, Amel Yessad and Vanda Luengo** - Discovering prerequisite relationships between knowledge components from an interpretable learner model.
- **Ran Bi and Shiyao Wei** - Exploring the Implementation of NLP Topic Modeling for Understanding the Dynamics of Informal Learning in an AI Painting Community
- **Sylvio Rüdian, Clara Schumacher, Jakub Kužílek and Niels Pinkwart** - Pre-selecting Text Snippets to provide formative Feedback in Online Learning
- **Tanya Nazaretsky, Hacı Hasan Yolcu, Moriah Ariely and Giora Alexandron** - Towards Automated Assessment of Scientific Explanations in Turkish using Language Transfer
- **Yo Ehara** - Course Concepts: How Readable Are They for ESL Learners?
- **Yo Ehara** - Measuring Similarity between Manual Course Concepts and ChatGPT-generated Course Concepts

## Doctoral Consortium

- **Antony Prakash** - Exploring students' learning processes by logging and analyzing their interaction behavior in a Virtual Reality learning environment.
- **Debarshi Nath, Dragan Gasevic and Ramkumar Rajendran** - A Trace-Based Multimodal Generalized SRL Framework for Reading-Writing Tasks.
- **Guanyu Chen and Yan Liu** - Response Process Data in Educational and Psychological Assessment: A Scoping Review of Empirical Studies.
- **Jyoti Shaha and Ramkumar Rajendran** - Analyzing the impact of metacognition prompts on learning in CBLE.
- **Meera Pawar and Sahana Murthy** - Understanding Learners Alternate Conceptions through Interaction Patterns During analogical reasoning.
- **Nisumba Soodhani K** - Analyzing Team Cognition and Combined Efficacy In Makerspaces Using Multimodal Data.
- **Pratiksha Patil, Ashwin T S and Ramkumar Rajendran** - Fostering Interaction in Computer-Supported Collaborative Learning Environment.
- **Ram Das Rai** - Designing a Learning Environment to Foster Critical Thinking.
- **Suprabha Jadhav** - Data Driven Online Training Program for Education Robotics Competition.
- **Vishwas Badhe, Chandan Dasgupta and Ramkumar Rajendran** - Investigating teams' Socially Shared Metacognitive Regulation (SSMR) and trans-activity in project-based computer supported collaborative learning environment.

## Demos

- **Jinglei Yu, Zitao Liu, Mi Tian, Deliang Wang and Yu Lu** - A Multimodal Language Learning System for Chinese Character Using Foundation Model
- **Arun Balajiee Lekshmi Narayanan, Khushboo Thaker, Peter Brusilovsky and Jordan Barria-Pineda** - Help Me Read! Expanding Student's Reading with Wikipedia Articles
- **Haoyu Liu, Fan-Yun Sun, Frieda Rong, Kumi Nakajima, Nicholas Haber and Shima Salehi** - Characterizing Learning Progress of Problem-Solvers Using Puzzle-Solving Log Data