2024 36th International Conference on Software Engineering Education and Training (CSEE&T 2024)

Wurzburg, Germany 29 July – 1 August 2024

 IEEE Catalog Number:
 CFP24027-POD

 ISBN:
 979-8-3503-7898-6

Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc. 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:	
ISBN (Print-On-Demand):	
ISBN (Online):	
ISSN:	

CFP24027-POD 979-8-3503-7898-6 979-8-3503-7897-9 1093-0175

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



36th International Conference on Software Engineering Education and Training (CSEE&T) CSEE&T 2024

Table of Contents

Message from General Chair	xi
Message from Program Chairs	xiii
Organizing Committee	xv
Program Committee	xvii
-	

Keynotes

Mastering the Balance between Software Design Qualities	xxiii
Sascha Kegreiß	
AI and Software Engineering Education: Riding the Wave of Innovation	xxv
Nancy R. Mead (Carnegie Mellon University)	

ASEE&T Track

Sustainable Competency-Oriented Computing Education for Π-Shape Elites and New Forms of Digital Education in the Future	xxix
Constructive Alignment in Software Engineering Education Axel Böttcher (Hochschule München University of Applied Sciences)	хххі
Competence-oriented Elaboration of Software Engineering Education	xxxiii

Workshop

Teaching Novices Programming and Important Applications in a Single Semester - Critical Factors from	
Zero to Portable GUI Programming in Four Hours	xxxvii
Rony G. Flatcher (Vienna University of Economics and Business)	

Full Papers

Cultivating Software Quality Improvement in the Classroom: An Experience with ChatGPT	. 3
How Much Effort Do You Need to Expend on a Technical Interview? A Study of LeetCode Problem Solving	12
Statistics Jialin Cui (North Carolina State University), Runqiu Zhang (University of Virginia), Fangtong Zhou, Ruochi Li (North Carolina State University), Yang Song (University of North Carolina Wilmington) and Edward Gehringer (North Carolina State University)	_ 13
Leveraging Peer-assessment in Project-based Software Engineering Courses	<u>. </u> 23
Haneen Hijazi (Hashemite University) and Yasser Ali Alshehri (West Virginia University)	
Case Study Based Pedagogical Intervention for Teaching Software Engineering Ethics	31
In the Footsteps of a Professional Software Engineer: Exploring Role-play in Teaching Software Design Fatma Meawad (CODE University of Applied Sciences)	41
"Think Before You Scrum" - An Experience Report on Daily Scrums to Aid Reflection	51
Automation of Test Skeletons within Test-Driven Development Projects	61
Muhammet Mustafa Olmez and Edward Gehringer (North Carolina State University)	
Leveraging Open Source LLMs for Software Engineering Education and Training Juanan Pereira, Juan Miguel López, Xabier Garmendia and Maider Azanza (University of the Basque Country (UPV/EHU)	71
Competence-based Assessment of Programming Assignments	. 81
Acknowledging Good Java Code with Code Perfumes	. 91
Philipp Straubinger, Florian Obermüller and Gordon Fraser (University of Passau)	
Technology Acquisition Plans to Foster Supply Chain Risk Management Learning Outcomes in Project- Based Software Development Courses	101
Bastian Tenbergen (State University of New York at Oswego) and Nancy R. Mead (Carnegie Mellon University)	
Short Papers	
Learning Environment Interoperability in Software Engineering Education Dimitri Bigler, Julian Manz, Kevin Lee, David Fischer and Georg Hagel (University of Applied Sciences Kempten)	113
Assessing Software Development Competences Constructively Aligned in an Open-Web Format Axel Böttcher and Veronika Thurner (Munich University of Applied Sciences)	119
Using Generative AI to Create User Stories in the Software Engineering Classroom Allan Brockenbrough and Dominic Salinas (Salem State University)	125

Adapting Computational Skills for AI Integration______131 Hanya Elhashemy (Technical University of Munich), Harold Abelson (Massachusetts Institute of Technology) and Tilman Michaeli (Technical University of Munich)

A Survey Study on the State of the Art of Programming Exercise Generation using Large Language Models	137
Eduard Frankford, Ingo Höhn, Clemens Sauerwein and Ruth Breu (University of Innsbruck)	
Leveraging Lecture Content for Improved Feedback: Explorations with GPT-4 and Retrieval Augmented Generation	143
Sven Jacobs and Steffen Jaschke (University of Siegen)	
Workplace Learning Ecology of Software Engineers and Implications for Teaching and Learning Aditya Johri, Aayushi Hingle Collier (George Mason University), Brent K. Jesiek (School of Engineering Education, Purdue University), Russel Korte (George Washington University) and Stephen Cory Brozina (Youngstown State University)	149
Who is that girl? Drawing a portrait of a female student in Software Engineering Yekaterina Kovaleva (LUT University), Praveena Nair Sivasankaran (Taylor's University) and Ari Happonen (LUT University)	155
Automated Programming Exercise Generation in the Era of Large Language Models Niklas Meißner, Sandro Speth and Steffen Becker (Institute of Software Engineering, University of Stuttgart)	161
Systematic Teaching of UML and Behavioral Diagrams	167
Anja Metzner (Technical University of Applied Sciences Augsburg)	
ScrumBoard: A Project Management Tool Purpose-Built for Software Engineering Education Matthew Minish, Fabian Gilson and Matthias Galster (University of Canterbury)	173
Evaluating Preschoolers' Block Programming Using Complexity and Personality Traits Yui Ono (Waseda University), Daisuke Saito (Takachiho University) and Washizaki Hironori (Waseda University)	179
Exploration and Practice of University-Enterprise Deep Integration Oriented Talent Training Mode for Software Engineering Specialty	185
Shuwei Qiu, Wei Huang, Gengzhong Zheng, Xiaojia Zhou and Mahammad Humayoo (Hanshan Normal University)	
Gameful Introduction to Cryptography for Dyslexic Students Argianto Rahartomo, Harpreet Kaur and Mohammad Ghafari (Technische Universität Clausthal)	191
Navigating the AI Frontier: A Critical Literature Review on Integrating Artificial Intelligence into	107
Software Engineering Education Chandan Kumar Sah, Dr. Lian Xiaoli (School of Computer Science and Engineering, Beihang University), Muhammad Mirajul Islam (College of Technology and Engineering Westcliff University) and Md Kamrul Islam (Universit' e Libre De Bruxelles)	197
ChatGPT's Aptitude in Utilizing UML Diagrams for Software Engineering Exercise Generation Sandro Speth, Niklas Meißner and Steffen Becker (Institute of Software Engineering, University of Stuttgart)	203
Towards Integrating Emerging AI Applications in SE Education Michael Vierhauser (University of Innsbruck), Iris Groher (Johannes Keppler University Linz), Tobias Antensteiner (University of Innsbruck) and Clemens Sauerwein (QE Research Group University of Innsbruck)	209
Toward AI-facilitated Learning Cycle in Integration Course through Pair Programming with AI Agents Zhengyuan Wei, Albert Ting-Leung Lee, Victor Chung-Sing Lee (The University of Hong Kong) and Wing-Kwong Chan (City University of Hong Kong)	215

University Students' Perception and Expectations of Generative AI tools for Software Engineering 22 Mounika Yabaku and Sofia Ouhbi (Uppsala University)	221
 A Deep Dive into CATS Evaluator Algorithm: Quantification of The Probability in Serious Game Cloud Security Defense Scenarios Tiange Zhao (Siemens AG), Ulrike Lechner (Universität der Bundeswehr München), Maria Pinto- Albuquerque (ISCTE-IUL - Instituto Universitário de Lisboa, Portugal), Didem Ongu and Tiago Gasiba (Siemens AG) 	227
Posters	
Using Generative Artificial Intelligence Tools in Software Engineering Courses 22 Soma Datta (University of Houston Clear Lake)	35
You & AI: a research computing hackathon2 James DesLauriers, Katerina Michalickova, John Pinney, Liam Gao and Chris Cooling (Imperial College London)	37
MASS, Marburg university auto ASess System22 Steffen Dick and Christoph Bockisch (Philipps Universität Marburg)	39
FeedbackPulse: GPT-Enabled Feedback Assistant for Software Engineering Educators 24 Yiwen Liao, Yuchao Jiang, Zhangpeng Chen and Basem Suleiman (University of New South Wales)	41
Presenting Experiential Educational Machine Learning Labs2 Yang Liu, Xiaofan Que, Dingrong Wang, Samuel A. Malachowsky and Daniel E. Krutz (Rochester Institute of Technology)	243
Requirements Engineering Education with Just-in-Time Teaching and Projects 24 Ralf Reißing (Coburg University of Applied Sciences and Arts) 24	45
Student Experiences in a Global Software Engineering Course Taught Jointly in Germany, Indonesia and 24 Japan 7 Felix Waigner, Andreas Roessler (Nuremberg Institute of Technology), Michael Evan Santoso 24 (Ritsumeikan University), Patricia Brockmann (Nuremberg Institute of Technology), D. Moritz 24 Marutschke (Kyoto University of Advanced Science), Tri Astoto Kurniawan (Brawijaya University) and 24 Victor Kryssanov (Ritsumeikan University) 24	247

Tool Demos

A Method and Software to Create SCORM Units for Computer Science Courses Peter Braun (Technical University of Applied Sciences Würzburg-Schweinfurt)	251
Accessible Learning Labs: Accessibility Education Through Experiential Learning Yang Liu, Xiaofan Que, Dingrong Wang, Samuel A. Malachowsky and Daniel E. Krutz (Rochester Institute of Technology)	253
Automated Assessment Tool for Teaching Web Application Development Basem Suleiman (University of New South Wales), Johan Alibasa (Sampoerna University) and Anthony Wang (University of Sydney)	255
A Tool to Facilitate Calibrated Peer Reviews in Software Engineering Education Bastian Tenbergen (State University of New York at Oswego)	257

Industry Track

Can LLMs Facilitate Onboarding Software Developers? An Ongoing Industrial Case Study Maider Azanza, Juanan Pereira, Arantza Irastorza (University of the Basque Country (UPV/EHU) and Aritz Galdos (LKS Next)	261
Mastering Software Craftsmanship: An industrial practitioner perspective Arastoo Barji (Siemens AG, Digital Industries, Process Automation), Thomas Jachmann (Siemens Healthineers AG, Computed Tomography, Head of Software) and Frances Paulisch (Siemens Healthineers, Head of Software Initiative)	267
Experience Report of the AWS+KCL Impact Accelerator for Public Sector Engagement Caitlin Bentley, Elena Simperl (King's College London), Mike Bainbridge, Daisy Ogden (Amazon Web Services), Stefanos Leonardos, Gunel Jahangirova, Joanna Walker, Wenjie Yin and Christopher Hampson (King's College London)	273
Serious Game for Industrial Cybersecurity: Experiential Learning through Code Review Andrei-Cristian Iosif (Siemens AG), Ulrike Lechner (Universität der Bundeswehr München), Maria Pinto-Albuquerque (ISCTE-IUL - Instituto Universitário de Lisboa, Portugal) and Tiago Gasiba (Siemens AG)	279
Journal First Track	
Towards understanding students' sensemaking of test case design: a one-page summary Niels Doorn (Open Universiteit), Tanja E. J. Vos (Open Universiteit and Universitat Politecnica de Valencia) and Beatriz Marin (Universidad Politecnica de Valencia)	287
Summary of: Lessons Learned from a Learning Program for Software Architects Frances Paulisch (Siemens Healthineers, Head of Software Initiative), Matthias Backert (Siemens Healthineers AG, Software Initiative, Training), Thomas Blum (Siemens Healthineers AG, Diagnostic Imaging, Magnetic Resonance)	289
Extension of a study on Parsons' Problems reveals implications for SEE&T Kevin D. Wendt (University of Minnesota)	291
Thriving in the era of hybrid work: Raising cybersecurity awareness using serious games in industry trainings	202
Tiange Zhao, Tiago Gasiba (Siemens AG), Ulrike Lechner (Universität der Bundeswehr München) and Maria Pinto-Albuquerque (ISCTE-IUL - Instituto Universitário de Lisboa, Portugal)	293
Teaching Engineering of Al-Intensive Systems Atif Mashkoor (Johannes Kepler University Linz); Wesley K. G. Assunção (North Carolina State University); Alexander Egyed (Johannes Kepler University Linz)	295
Author Index	297