UNIVERSITÀ DEGLI STUDI DI MILANO

DIPARTIMENTO DI INFORMATICA

ITiCSE 2024

July 8-10, 2024 — Milano

SIGCSE Special Interest Group Computer Science Education

INFORMATICS EUROPE

acm Europe Council

Education

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	Monday July 8th
	Sala Pio XII
08:00 | 9:00	Registration
9:00 | 9:30	Opening session
9:30 | 10:30	*Teaching programming in the age of generative AI* — Simone Martini

	Sala Pio XII	Sala Napoleonica	Aula 1 Barelli	Aula 3 Panighi	Aula 2 Lazzati
11:00 | 12:40	**Session 1α** **Generative AI – perspectives** ***chair: Åsa Cajander*** *Early Adoption of Generative Artificial Intelligence in Computing Education: Emergent Student Use Cases and Perspectives in 2023* — C. Estelle Smith et al. *Guidelines for the Evolving Role of Generative AI in Introductory Programming Based on Emerging Practice* — Joyce Mahon et al. *AI-Grading Standup Updates to Improve Project-Based Learning Outcomes* — Tyler Menezes *Artificial Intelligence in Everyday Life 2.0: Educating University Students from Different Majors* — Maria Kasinidou et al.	**Session 1β** **Feedback** ***chair: Lina Battestilli*** *Feedback-Generation for Programming Exercises With GPT-4* — Imen Azaiz et al. *Let Them Try to Figure It Out First – Reasons Why Experts (Do Not) Provide Feedback to Novice Programmers* — Dominic Lohr et al. *Iterative Student Program Planning using Transformer-Driven Feedback* — Elijah Rivera et al. *Open Source Language Models Can Provide Feedback: Evaluating LLMs' Ability to Help Students Using GPT-4-As-A-Judge* — Charles Koutcheme et al.	**Session 1γ** **Code quality** ***chair: Jürgen Börstler*** *Catalog of Code Quality Defects in Introductory Programming* — Anna Řechtáčková et al. *Embedded-check a Code Quality Tool for Automatic Firmware Verification* — Rafael Corsi Ferrão et al. *Asking Students to Refactor their Code: A Simple and Valuable Exercise* — Cruz Izu and Claudio Mirolo *Are a Static Analysis Tool Study's Findings Static? A Replication* — David Liu et al.	**Session 1δ** **Errors and testing** ***chair: Tobias Kohn*** *Comparison of Three Programming Error Measures for Explaining Variability in CS1 Grades* — Valdemar Švábenský, et al. *Navigating Compiler Errors with AI Assistance: A Study of GPT Hints in an Introductory Programming Course* — Maciej Pankiewicz and Ryan Shaun Baker *Combining Local Testing with Automatic Commits: Benefits for Progress Tracking and CS2 Students' Learning Experience* — Aleksandar Karakaš and Denis Helic *Insights from the Field: Exploring Students' Perspectives on Bad Unit Testing Practices* — Anthony Peruma et al.	**Session 1ε** **Tips, Techniques and Courseware** ***chair: Ethel Tshukudu*** *Automated Evaluation of Games programmed in Computer Science Assessments* — Dieter Meiller et al. *Active Repos: Integrating Generative AI Workflows into GitHub* — Richard Glassey and Alexander Baltatzis *Pytch – Supporting your teaching of coding in classroom* — Glenn Strong et al. *Parsons Problems for Professional Learners* — Geela Venise Fabic Chee et al. *Explaining Algorithms with the Visual Programming Language Algot* — Sverrir Thorgeirsson and Oliver Graf

Monday July 8th

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14:20 | 15:10	**Session 2α** **Panel: Computer Science Curricula 2023 (CS2023)** *Rising to the Challenges of Change in AI, Security, and Society* — Sherif Aly, Brett Becker, Amruth Kumar and Rajendra K. Raj	**Session 2β** **Recursion** ***chair: Max Fowler*** *"Like a Nesting Doll": Analyzing Recursion Analogies Generated by CS Students Using Large Language Models* — Seth Bernstein et al. *Why Is Recursion Hard to Comprehend? An Experiment with Experienced Programmers in Python* — Aviad Baron et al.	**Session 2γ** **Computing in schools 1** ***chair: Jane Waite*** *Experimental Analysis of First-Grade Students' Block-Based Programming Problem Solving Processes* — Gabriele Pozzan et al. *Experiences Trialling a Novel Block-to-text Environment in a Summer School Context* — Glenn Strong et al.	**Session 2δ** **Teaching** ***chair: Matti Tedre*** *Grasping the Unseen: TA Insights into Teaching Subtle Concepts in Computer Science* — Pontus Haglund et al. *Classification of Shared Tasks Used in Teaching* — Theresa Elstner et al.	**Session 2ε** **Sponsor session** ***chair: Bedour Alshaigy*** *GitHub Education*
15.30 | 16.45	**Session 3α** **Computing in schools 2** ***chair: Juho Leinonen*** *Feedback Literacy: Holistic Analysis of Secondary Educators' Views of LLM Explanations of Program Error Messages* — Veronica Cucuiat and Jane Waite *"Something that Happens Each Day" – Students' Explanations of What Algorithms Are* — Martina Landman and Tobias Kohn *Big Ideas of Cryptography in Primary School* — Michael Lodi et al.	**Session 3β** **Assessment and autograding** ***chair: Jonathan Calver*** *Code Generation Based Grading: Evaluating an Auto-grading Mechanism for "Explain-in-Plain-English" Questions* — David Smith and Craig Zilles *Quickly Producing "Isomorphic" Exercises: Quantifying the Impact of Programming Question Permutations* — Max Fowler et al. *A Comparison of Proctoring Regimens for Computer-Based Computer Science Exams* — Chinedu Emeka et al.	**Session 3γ** **Cybersecurity 1** ***chair: Leo Porter*** *Research and Practice of Delivering Tabletop Exercises* — Jan Vykopal et al. *From Paper to Platform: Evolution of a Novel Learning Environment for Tabletop Exercises* — Valdemar Švábenský et al. *Using Real-world Bug Bounty Programs in Secure Coding Course: Experience Report* — Kamil Malinka et al.	**Session 3δ** **Computer science theory** ***chair: Stan Kurkovsky*** *Redux: An Interactive, Dynamic Knowledge Base for Teaching NP-completeness* — Kaden Marchetti et al. *Nondeterministic to Deterministic Finite-State Machine Visualization* — Tijana Minić and Marco T. Morazan *FSM Builder: A Tool for Writing Autograded Finite Automata Questions* — Eliot Robson et al.	**Session 3ε** **Databases** ***chair: Rajendra K. Raj*** *Teaching Multiple Data Models and Query Languages* — Jens Ehlers *Building Blocks Towards More Effective SQL Error Messages* — Toni Taipalus and Hilkka Grahn *Enhancing Feedback Generation for Autograded SQL Statements to Improve Student Learning* — Carsten Kleiner and Felix Heine

Tuesday July 9th

	Sala Pio XII	Sala Napoleonica	Aula 1 Barelli	Aula 3 Panighi	Aula 2 Lazzati
09:00 | 10:40	**Session 4α** **Generative AI – programming** ***chair: Andrew Luxton-Reilly*** *Self-Regulation, Self-Efficacy, and Fear of Failure Interactions with How Novices Use LLMs to Solve Programming Problems* — Lauren Margulieux et al. *Explaining Code with a Purpose: An Integrated Approach for Developing Code Comprehension and Prompting Skills* — Paul Denny et al. *Performance, Workload, Emotion, and Self-Efficacy of Novice Programmers Using AI Code Generation* — Nicholas Gardella et al. *CS1-LLM: Integrating LLMs into CS1 Instruction* — Annapurna Vadaparty et al.	**Session 4β** **EDI** ***chair: Rebecca Robinson*** *Why Female Students Are Dropping out of CS Programs* — Rukiye Altin and Andreas Mühling *Competency and Equity Driven Grading System for Computer Science Curriculum* — Benjamin Fine *"You don't see too many of me, too many of us, in that area": Exploring the Challenges and Opportunities of Promoting STEM Education among Black and Latinx Students* — Isabella Lopez and Sanorita Dey *Generation and Evaluation of a Culturally-Relevant CS1 Textbook for Latines using Large Language Models* — Ismael Villegas Molina et al.	**Session 4γ** **Professional skills** ***chair: Mats Daniels*** *Early Computer Science Students' Perspectives Towards The Importance Of Writing* — Rutwa Engineer et al. *Student Perceptions of Computer Science as a Profession* — Stacy Doore et al. *Embedding Technical, Personal and Professional Competencies in Computing Degree Programmes* — Tom Crick et al. *Students' Perceptions of Behaviors Associated with Professional Dispositions in Computing Education* — Natalie Kiesler et al.	**Session 4δ** **Plagiarism** ***chair: Michael Liut*** *Semantic Similarity Search for Source Code Plagiarism Detection: An Exploratory Study* — Fahad Ebrahim and Mike Joy *ChatGPT and Cheat Detection in CS1 Using a Program Autograding System* — Ashley Pang and Frank Vahid *Performance Analysis and Interviews of Non-CS-Major Students Sanctioned for Cheating in CS1* — Ashley Pang and Frank Vahid *Style Anomalies Can Suggest Cheating in CS1 Programs* — Benjamin Denzler et al.	**Session 4ε** **DC Lightning talks** ***chair: Steve Cooper, Valentina Dagienė*** *Educators as Stakeholders within Adaptive Learning* — Nawaf Alajlani *Developing Automatic Methods for Teaching Code Quality in Introductory Programming* — Anna Řechtáčková *Towards* Better Design and Delivery of SE Team Project Courses — Nayla Nasir *Improving Dropout Prediction for Informatics Bachelor Students* — Bettina Manuela Johanna Kern *Towards the Integration of Large Language Models in an Object-Oriented Programming Course* — Bruno Pereira Cipriano *Improving Computing Higher Education in Prisons* — Sven Grübel *Integrating Sustainability Cases in Higher Computing Education* — Bashira Jaradat *A Learning Theory of Programming Language Acquisition* — David Zabner *A Proposal to Test a Strategy of Interdisciplinary Transfer between Algebra and Computer Science for Self-Efficacy, Optimized Cognitive Load, and Conceptual Understanding* — Noah Cowit *Empowering black women in computing: fostering inclusion and belonging through virtual communities* — Luce-Melissa Kouaho *A mental leap: Impact of Teaching the Math behind Machine Learning Techniques in K-12* — Lukas Lehner *Meaningful Highlighting – Improving Educational IDEs to Enhance Code Comprehension for Programming Novices* — Annika Vielsack *Teaching Cyber Security to High-School Students* — Sven Grübel *Teaching Programming through Multi-Context Physical Computing* — Alexandra Maximova

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11:25 | 13:05	**Session 5α** **Autograding** ***chair: Carsten Kleiner***	**Session 5β** **Emotions, confidence and belonging** ***chair: Fiona McNeill***	**Session 5γ** **Virtual tutors** ***chair: James Prather***	**Session 5δ** **Ethics** ***chair: Sue Sentance***	**Session 5ε** **Tips, Techniques and Courseware** ***chair: Tobias Kohn***
	Ordered Network Analysis in CS Education: Unveiling Patterns of Success and Struggle in Automated Programming Assessment — Andres Felipe Zambrano et al. *A Case For Reflection In Autograding* — Chad Hogg *Scalable Autograding for Quantum Programming Assignments* — Jonathan Beaumont and Kathryn Wakevainen *Improving Student Learning with Automated Assessment* — Ruben Acuna and Ajay Bansal	*Exploring Students' Self-Confidence in Their Programming Solutions* — Sven Strickroth *In-Person vs Blended Learning: An Examination of Grades, Attendance, Peer Support, Competitiveness, and Belonging* — Anshul Shah et al. *On Using Physiological Sensors and AI to Monitor Emotions in a Bug-Hunting Game* — Natalia Silvis-Cividjian et al. *Fostering and Assessing Dispositions by providing Grades a Meaning in a Computing Education Context* — Laura Tubino and Andrew Cain	*Can Small Language Models with Retrieval-Augmented Generation Replace Large Language Models when Learning Computer Science?* — Suqing Liu et al. *Iris: An AI-Driven Virtual Tutor for Computer Science Education* — Patrick Bassner et al. *Chatbot Development Using LangChain: A Case Study to Foster Critical Thinking and Creativity* — Laura Farinetti and Lorenzo Canale *Desirable Characteristics for AI Teaching Assistants in Programming Education* — Paul Denny et al.	*With Great Power Comes Great Responsibility – Integrating Data Ethics into Computing Education* — Natalie Kiesler et al. *Student Perspectives on Using a Large Language Model (LLM) for an Assignment on Professional Ethics* — Virginia Grande et al. *First Year CS Students Exploring And Identifying Biases and Social Injustices in Text-to-Image Generative AI* — Mikko Apiola et al. *Agile Ethics: A Low Stakes, Skills-based Framework for Teaching CS Ethics* — Alexi Brooks	*Simplifying multimedia programming for novice programmers: MediaLib and its learning materials* *— Adam Wynn et al.* *Learn by example in a modern embedded system course* *— Rafael Corsi Ferrão et al.* *Programming Workbook: A Collaborative Coding Fusion (Print and Online) for Mastering Programming Fundamentals* *— Christian Servin* *Individualising Assessments at Scale* *— Joshua Burridge* *Databases Without Databases: Projects for Including Database Concepts in Interdisciplinary Curricula with LINQ* *— Nuno Fachada*

	Wednesday July 10th				
	Sala Pio XII	**Sala Napoleonica**	**Aula 1 Barelli**	**Aula 3 Panighi**	**Aula 2 Lazzati**
09:00 | 10:40	**Session 6α** **Working Groups** ***chair: Dennis Bouvier & Ari Korhonen*** *WG 1: Computing Education in Africa* *WG 2: A Multi-Institutional-Multi-National Study into the Impacts of AI on Work Practices of IT Professionals and Implications for Computing Students* *WG 3: Experiences of Instructors Who Teach Capstone Courses in the Computing and Information Technology Fields* *WG 4: Curriculum Analysis for Data Systems Education* *WG 5: All for One and One for All – Collaboration in Computing Education: Policy, Practice, and Professional Dispositions* *WG 6: Equity-Minded Computer Science Undergraduate Curriculum* *WG 7: What We Talk About When We Talk About K-12 Computing Education*	**Session 6β** **Tools and environments** ***chair: Brent Reeves*** *Design and Evaluation of a Web-based Distributed Pair Programming Tool for Novice Programmers* — José Colin et al. *Containerizing CS50: Standardizing Students' Programming Environments* — David Malan *MemStep: An Interactive Tool for Constructing and Visualizing the Run-Time Memory Layout of Java Programs* — Michelle Pham et al. *The Shell Tutor: An Intelligent Tutoring System For The UNIX Command Shell And Git* — Jaxton Winder et al.	**Session 6γ** **Software engineering** ***chair: Cruz Izu*** *External Projects and Partners: Addressing Challenges and Minimizing Risks from the Outset* — Stan Kurkovsky et al. *Code Refactoring Strategies of Third Year Software Engineering Students* — Roshan Rajapakse and Claudia Szabo *Utilizing the Constrained K-Means Algorithm and Pre-Class GitHub Contribution Statistics for Forming Student Teams* — Jialin Cui et al. *A Comparative Analysis of GitHub Contributions Before and After An OSS Based Software Engineering Class* — Jialin Cui et al.	**Session 6δ** **Student success and block-based programming** ***chair: Sean Russell*** *Investigating Academic Confidence, Workload Stress, and Performance in a BlendFlex Computer Science Course* — Madison Book et al. *NextBlocks: An Interactive Block Programming Platform* — Duarte Pereira et al. *Block-Based Programming for Mobile with Conventional Exceptions and Automatic Evaluation* — Aryobarzan Atashpendar and Steffen Rothkugel *From Visual Arts to Programming: Exploring the Impact on Achievement in Constructionist College CS1 Classes* — Oladele O. Campbell et al.	**Session 6ε** **Live coding** ***chair: Guido Rößling*** *Scalable Feedback for Student Live Coding in Large Courses Using Automatic Error Grouping* — Sven Strickroth *Comparing the Experiences of Live Coding versus Static Code Examples for Students and Instructors* — Andrea Watkins et al. *A Comparison of Student Behavioral Engagement in Traditional Live Coding and Active Live Coding Lectures* — Anshul Shah et al. *Assessing Live Programming for Program Comprehension* — Oliver Graf et al.

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11:25 | 12:40	**Session 7α** **Parsons problems** ***chair: Sara Hooshangi*** *Evaluating Micro Parsons Problems as Exam Questions* — Zihan Wu and David Smith *Exploring the Acceptance and Effectiveness of Parsons Problems on Scaffolding CS1 Retakers* — Felipe Sanhueza et al. *Automating Personalized Parsons Problems with Customized Contexts and Concepts* — Andre del Carpio Gutierrez et al.	**Session 7β** **Computing in schools 3** ***chair: Michael Caspersen*** *Customizing ChatGPT to Help Computer Science Principles Students Learn Through Conversation* — Matthew Frazier et al. *Computational Thinking for Self-Regulated Learning* — Stefan Pasterk and Gertraud Benke *Students' Motivation and Intention to Engage with Data-Driven Technologies from a CS Perspective in Everyday Life* — Lukas Höper et al.	**Session 7γ** **Curriculum and learning resources** ***chair: Rita Garcia*** *Stubents: Videos Created by and for Students, Active Learning Resources in Large and Diverse Computer Science Classrooms* — Yige Chen and Bernardo Pereira Nunes *Designing a CURE for CS1* — Kevin Buffardi et al. *The CS1 Python Bakery: A Modern "Batteries Included" Open-Source Curriculum with All the Fixings* — Austin Bart et al.	**Session 7δ** **Cybersecurity 2** ***chair: Roger McDermott*** *A User Experience Study of MeetingMayhem: a Web-Based Game to Teach Adversarial Thinking* — Shan Huang et al. *Design and Use of Privacy Capture-the-Flag Challenges in an Introductory Class on Information Privacy and Security* — Wolfgang Vigl and Svetlana Abramova *Equitable Access to Cybersecurity Education: A Case Study of Underserved Middle School Students* — Madison Thomas et al.	**Session 7ε** **Broadening participation 1** ***chair: Monica Divitini*** *Broadening Computing Participation in the Navajo Nation* — Ashish Amresh et al. *Uncovering Meaningful Computing Contexts for Incarcerated College Students* — Emma Hogan et al.
14:30 | 15:20	**Session 8α** **Working Groups** ***chair: Dennis Bouvier & Ari Korhonen*** *WG8: Designing a Pedagogical Framework for Developing Abstraction Skills* *WG9: How Are Instructors Incorporating Generative AI into Teaching Computing?* *WG10: Improving Code Quality at CS1 Level: Structure, Style and Good Practices*	**Session 8β** **Student engagement** ***chair: Marie Devlin*** *Enhancing Student Engagement in Large-Scale Capstone Courses: An Experience Report* — Asma Shakil and Paul Denny *Agora: Motivating and Measuring Engagement in Large-Class Discussions* — Hedayat Zarkoob et al.	**Session 8γ** **Computing education research and perception** ***chair: Kevin Buffardi*** *Exploring Barriers and Strategies to boost Scientific Output in Computing Education in Africa* *Early Insights* — Ismaila Temitayo Sanusi and Ethel Tshukudu *Exploring Perception in Computer Graphics Education* — Amani Najimudeen and Anne-Kathrin Peters	**Session 8δ** **Supporting students** ***chair: Jack Parkinson*** *TeachNow: Enabling Teachers to Provide Spontaneous, Realtime 1:1 Help in Massive Online Courses* — Ali Malik et al. *Building Student Support for Computing Students: How Do Students Respond to Different Models?* — Fiona McNeill et al.	**Session 8ε** **Broadening participation 2** ***chair: Ouldooz Baghban Karimi*** Capital in Computing Education: Investigating Factors Underlying Participation — Thom Kunkeler and Aletta Nylén Bringing Our Full Selves Into Computing: Designing, Building, and Fostering Equitable Computing Education Communities — Francisco Enrique Vicente Castro et al.

Monday June 8th

09:00	Opening		
09:30	Keynote		
10:30	Coffee-break – Posters A		
11:00	$1\alpha - 1\delta$ Papers	1ε Tips, Techniques, and Courseware	
12:40	Lunch (Cafeteria)		
14:20	2α Panel	$2\beta - 2\delta$ Papers	2ε Sponsor
15:10	Refreshments – Posters A		
15:30	$3\alpha - 3\varepsilon$ Papers		
16:50	Concert		
18:00	Reception (Rettorato)		

Tuesday June 9th

09:00	$4\alpha - 4\delta$ Papers	4ε DC Lightning Talks
10:40	Coffee-break – DC Posters	
11:25	$5\alpha - 5\delta$ Papers	5ε Tips, Techniques, and Courseware
13:05	Lunch (Cafeteria)	
14:30 | 17:30	Excursions city tours + museum visits	
19:00	Banquet (Rettorato)	

Wednesday June 10th

09:00	6α Working Groups	$6\beta - 6\varepsilon$ Papers
10:40	Coffee-break – Posters B	
11:25	$7\alpha - 7\varepsilon$ Papers	
12:40	Lunch (Cafeteria)	
14:30	8α Working Groups	$8\beta - 8\varepsilon$ Papers
15:20 | 16:30	Closing & Awards