

Preliminary Conference Program

San Francisco	New York	Sydney	UTC	London	Paderborn	Monday June 28	Tuesday June 29	Wednesday June 30	Thursday July 1
							Social (HNF Tour)	Social (HNF Tour)	Social (HNF Tour)
5:00	8:00	22:00	12:00	13:00	14:00	Welcome&Keynote	Lean Coffee	Lean Coffee	Lean Coffee
5:30	8:30	22:30	12:30	13:30	14:30	Welcome&Keynote	Session	Keynote	Session
6:00	9:00	23:00	13:00	14:00	15:00	Break	Session	Keynote	Session
6:30	9:30	23:30	13:30	14:30	15:30	WG Presentation	Break	Break	Break
7:00	10:00	0:00	14:00	15:00	16:00	WG Presentation	TT&C	Poster	Session
7:30	10:30	0:30	14:30	15:30	16:30	WG Presentation	TT&C	Poster	Session
8:00	11:00	1:00	15:00	16:00	17:00	Break	Break	Break	Break
8:30	11:30	1:30	15:30	16:30	17:30	Session	Session	Session	Doctoral Poster
9:00	12:00	2:00	16:00	17:00	18:00	Session	Session	Session	Keynote
9:30	12:30	2:30	16:30	17:30	18:30	Break	Break	Panel	Keynote
10:00	13:00	3:00	17:00	18:00	19:00	Session	TT&C	Panel	Closing / Awards
10:30	13:30	3:30	17:30	18:30	19:30	Session	TT&C	Panel	
						Social	Social (City Tour)	Social (HNF Tour)	Social - 'long goodbye'

Please note: This is a **living document**. All information you find in this document can (and most likely will) change. The final conference program will be made available in the conference Moodle shortly before the conference.

Please also note that this program is not yet complete. Expect events to be added and existing information to become more detailed.

Monday, June 28

12:00 UTC Welcome and Keynote Session

“Under Co-Construction: Towards the Social Design of Explainable AI Systems” Professor Katharina Rohlfing (Paderborn University, Germany)

13:05 UTC Break

13:30 UTC Working Group Presentations

- WG 1: Post-COVID Educational Landscapes
- WG 2: Towards a Curricula Framework to Support the Design of eSports Courses in Higher Education
- WG 3: Chronicling the Evidence for Broadening Participation
- WG 4: Exploring and Assessing Practical Computing Competencies
- WG 5: Planning a Conceptual Framework Approach for Teaching Cloud Fundamentals

15:00 UTC Break

15:30 UTC Paper Sessions

Session – Teaching & learning: Online CS education I

Chair: Amber Settle

- Online Hackathons as an Engaging Tool to Promote Group Work in Emergency Remote Learning (Kiev Gama, Carlos Zimmerle and Pedro Rossi)
- Beyond Gaming: The Potential of Twitch for Online Learning and Teaching (Johanna Pirker, Alexander Steinmaurer and Aleksandar Karakas)
- Approaches to Transitioning Computer Science Classes from Offline to Online (Alexander Brooks, Caroline Hardin, Jennifer Scianna, Matthew Berland and Laura Hobbes Legault)

Session – Teaching & learning: Testing I

Chair: Juho Leinonen

- Reproduction for Insight: Towards Better Understanding the Quality of Students Tests (Maurits Lawende, Harrie Passier and Greg Alpár)
- Guiding Next-Step Hint Generation using Automated Tests (Florian Obermüller, Ute Heuer and Gordon Fraser)
- Snap-Check: Automated Testing for Snap Programs (Wengran Wang, Chenhao Zhang, Andreas Stahlbauer, Gordon Fraser and Thomas Price)

Session – Students: Diversity I

Chair: Madeleine Lorås

- Pedagogical Interventions to Improve the Outcomes of Hispanics in AP Computer Science (Mayra Bachrach, Patricia Morreale and Gail Verdi)
- Understanding the Link between Computer Science Instruction and Reading & Math Performance (Jean Salac, Cathy Thomas, Chloe Butler and Diana Franklin)
- The Impact of Technical Interviews, and other Professional and Cultural Experiences on Students' Computing Identity (Stephanie Lunn, Monique Ross, Zahra Hazari, Mark Weiss, Michael Georgiopoulos and Kenneth Christensen)

Session – Curriculum: CS for all I

Chair: Morgan Fong

- An Accelerated CS0 for Online Mature-Age Part-Time Students (William Billingsley and Jonathan Vitale)
- Rapid Entry for Non-Majors into a Masters in Computing Program (Gary Krenz, Thomas Kaczmarek and John Moyer)
- PyXYZ: An Educational 3D Wireframe Engine in Python (Diogo de Andrade and Nuno Fachada)

16:30 UTC Break

17:00 UTC Paper Sessions

Session – Teaching & learning: Programming I

Chair: Daniel Krutz

- A Memory Diagram for All Seasons (Paul Dickson and Toby Dragon)
- Tutors' Experiences in Using Explicit Strategies in a Problem-Based Learning Introductory Programming Course (Olivier Goletti, Kim Mens and Felienne Hermans)
- Live Coding: A Review of the Literature (Ana Selvaraj, Eda Zhang, Leo Porter and Adalbert Gerald Soosai Raj)

Session – Assessment: Customized assessment

Chair: Emma Riese

- One Size Doesn't Fit All: Diversifying Data Science Course Projects by Student Background and Interests (Wensheng Wu)
- Are Working Habits Different Between Well-Performing and at-Risk Students in Online Project-Based Courses? (Mingxiao An, Hongyi Zhang, Jaromír Šavelka, Shijie Zhu, Chris Bogart and Majd Sakr)
- The CS1 Reviewer App: Choose Your Own Adventure or Choose for Me! (Anshul Shah, Jonathan Liu, Kristin Stephens-Martinez and Susan Rodger)

Session – Students: Students' learning

Chair: Bruce Scharlau

- Frozen in the Past: When it Comes to Analogy Fears, It's Time For Us to “Let it Go” (Briana Bettin)
- A Quantitative Analysis of Study Habits Among Lower- and Higher-Performing Students in CS1 (Soohyun Nam Liao, Kartik Shah, William G. Griswold and Leo Porter)
- Does the Early Bird Catch the Worm? Earliness of Students' Work and its Relationship with Course Outcomes (Juho Leinonen, Francisco Castro and Arto Hellas)

Session – Students: Diversity II

Chair: Keith Quille

- The Early Bird Gets the Worm: Major Retention in CS3 (Fee Christoph, Westley Weimer and Kevin Angstadt)
- Proficiency in Basic Data Structures among Various Subpopulations of Students at Different Stages in a CS Program (Sander Valstar, Sophia Krause-Levy, Adrian Salguero, Leo Porter and William Griswold)
- ‘It’s a bit weird, but it’s ok’? How female Computer Science students navigate being a minority (Emily Winter, Lisa Thomas and Lynne Blair)

Tuesday, June 29

11:00 UTC Guided live tour through the Heinz Nixdorf MuseumsForum Computer Museum

12:00 UTC Lean Coffee Break

12:30 UTC Paper Sessions

Session – Teaching & learning: Programming II

Chair: Simon

- Good Bug Hunting: Inspiring and Motivating Software Testing Novices (Natalia Silvis-Cividjian, Marc Went, Robert Jansma, Viktor Bonev and Emil Apostolov)
- Learning Transfer in Novice Programmers: a preliminary study (Cruz Izu and Claudio Mirolo)
- PDL: Scaffolding Problem Solving in Programming Courses (Shu Lin, Na Meng, Dennis Kafura and Wenxin Li)

Session – Assessment: Online assessment

Chair: Mats Daniels

- Developing an Open-Book Online Exam for Final Year Students (Keith Quille, Keith Nolan, Brett Becker and Sean McHugh)
- On-the-fly estimation of task difficulty for item-based adaptive online learning environments (Maciej Pankiewicz and Marcin Bator)
- Assessing Programming Skills and Knowledge During the COVID-19 Pandemic: An Experience Report (Norman Tiong Seng Lee, Oka Kurniawan and Kenny Tsu Wei Choo)

Session – Curriculum: CS for all II

Chair: Judith Gal-Ezer

- Machine Learning for Business Students: An Experiential Learning Approach (Linus Wunderlich, Allen Higgins and Yossi Lichtenstein)
- Computing and Gestures in High School Biology Education (Line Have Musaeus and Peter Musaeus)
- Comparing pre-tertiary curricula to investigate the timing of computing exposure (Elliot Varoy, Kerry Lee, Andrew Luxton-Reilly and Nasser Giacaman)

Session – Teachers: Understanding educators

Chair: Lillian Cassel

- Challenges Faced by Teaching Assistants in Computer Science Education Across Europe (Emma Riese, Madeleine Lorås, Martin Ukrop and Tomáš Effenberger)
- Comparing Programming Self-Esteem of Upper Secondary School Teachers to CS1 Students (Roisin Faherty, Keith Quille, Rebecca Vivian, Monica McGill, Brett Becker and Karen Nolan)
- Instructor Performance on Progressively Complex Programming Tasks: A Multi-Institutional Study from India (Viraj Kumar and Amey Karkare)

13:30 UTC Break

14:00 UTC Supporter Session - Google: Google's research and support for researchers in Europe

14:00 UTC Tips, Techniques and Courseware Sessions

TT&C Session 1

- Learning Compiler Design: From the Implementation to Theory (Rafael Del Vado Virseda)
- When Flying Blind, Bring a Co-pilot: Informal Peer Observation and Cooperative Teaching During Remote Teaching (Daniel Bosk and Richard Glassey)
- Sanitize This! Sharing Assignments and Solutions Safely in a Single Git Repository (Tobias Hansson, Richard Glassey and Simon Larsén)
- Double-blind Peer Review using RepoBee for Git-based Assignments (Simon Larsén and Richard Glassey)

TT&C Session 2

- A Big Data Learning Platform for the West Balkans and Beyond (Damien Graux, Valentina Janev, Hajira Jabeen and Emanuel Sallinger)
- Raising Awareness for IT Security in Higher Education - A Teaching Experiment on SQL Injection for Non-Computer Science Majors (Vivien Weinfurter, Amrei Sophia Kirmaier, Philipp Brune and Bianca Bergande)

- How it Works: Algorithms. A Tool for Developing Understanding of Control Structures (Oleg Sychev, Mikhail Denisov and Grigory Terekhov)
- CorrectWriting: Open-Ended Question with Hints for Teaching Programming-Language Syntax (Oleg Sychev)

15:00 UTC Break

15:30 UTC Paper Sessions

Session – Teaching & learning: Collaborative learning

Chair: Birgit Krogstie

- The Relationship of CS Attitudes, Perceptions of Collaboration, and Pair Programming Strategies on Upper Elementary Students' CS Learning (Jessica Vandenberg, Arif Rachmatullah, Collin Lynch, Kristy Elizabeth Boyer and Eric Wiebe)
- Virtual learning environment to encourage students' relationships and cooperative competence acquisition (Rosa Estriegana, Jose-Amelio Medina-Merodio, Rafael Robina-Ramírez and Roberto Barchino Plata)
- Using Dialogue Analysis to Predict Women's Stress During Remote Collaborative Learning in Computer Science (Kimberly Michelle Ying, Gloria Ashiya Katuka and Kristy Elizabeth Boyer)

Session – Teaching & learning: Educational tools

Chair: Andreas Mühling

- TermAdventure: Interactively Teaching UNIX Command Line, Text Adventure Style (Marek Šuppa, Ondrej Jariabka, Adrián Matejov and Marek Nagy)
- Supporting CS1 Instructors: Design and Evaluation of a Game Generator (Jecton Anyango and Hussein Suleman)
- The Pandos Project and the uMPS3 Emulator (Michael Goldweber, Renzo Davoli and Mattia Biondi)

Session – Teaching & learning: Computational thinking

Chair: Marc Berges

- Investigating the Impact of Computing vs Pedagogy Experience in Novices Creation of Computing-Infused Curricula (Amy Isvik, Veronica Catete and Tiffany Barnes)

- Teacher Views on Computational Thinking as a Pathway to Computer Science (Sukanya Kannan Moudgalya, Aman Yadav, Philip Sands, Sara Vogel and Michael Zamansky)
- What Do We Know about Assessing Computational Thinking? Establishing a New Methodological Perspective from the Literature (Ruohan Liu, Feiya Luo and Maya Israel)

Session – Students: Diversity III

Chair: Linda Ott

- Evaluating Current Continuous Improvement Approach in an ABET-Accredited Computing Program (Abdullah Azzouni and Jennifer Parham-Mocello)
- Better students through open doors? (Nea Pirttinen, Juho Leinonen and Kjell Lemström)
- Exploring Why Underrepresented Students Are Less Likely to Study Machine Learning and Artificial Intelligence (Daphne Barretto, Julienne LaChance, Emanuelle Burton and Soohyun Nam Liao)

16:30 UTC Break

17:00 UTC Supporter Session - CodeGrade: Autograding with ease, transitioning from manual to automatic grading in programming courses with CodeGrade

17:00 UTC Tips, Techniques and Courseware Sessions

TT&C Session 3

- ALL: Accessibility Learning Labs for Computing Accessibility Education (Saad Khan, Heather Moses, Samuel Malachowsky and Daniel Krutz)
- The Blockchain Art Simulation (BARTS) and Experiential Exercises (George Sanders and Sean Sanders)
- Teaching Social Engineering Using Improv (John Aycock)
- A Lab to Build an Altair Clone on a Breadboard (Michael Black)

TT&C Session 4

- Introducing a Technical Interview Preparation Activity in a Data Structures and Algorithms Course (Amanpreet Kapoor and Christina Gardner-Mccune)
- cardComposer: A Functional Programming Card Game (Maria Hwang and Mark Santolucito)
- Using Service-learning in Graduate Curriculum to Address Teenagers' Vulnerability to Web Misinformation (Francesca Spezzano)

18:00 Social: Virtual tour through the city of Paderborn

Wednesday, June 30

11:00 UTC Guided live tour of the Heinz Nixdorf MuseumsForum Computer Museum

12:00 UTC Lean Coffee Break

12:30 UTC Keynote

“Learning About Security - Who, What, When, Why and How?” Professor Angela Sasse (Ruhr University Bochum, Germany)

13:30 UTC Break

14:00 UTC Poster Session

- Cognitive Systems in Computing Education (Marek Ogiela and Lidia Ogiela)
- A Visualization for Teaching Integer Coercion (James Walker, Steven Carr, Ahmed Radwan, Yu-Hsiang Hu, Yu Chin Cheng, Jean Mayo and Ching-Kuang Shene)
- Mixing cognitive and affective approaches in teaching introductory programming (João Marcelo Borovina Josko)
- The Elusive Metrics - Are We Telling the Full Story in Educational Data Mining? (Keith Quille, Keith Nolan and Stephen Colgan)
- CS vs non-CS: Analyzing Online Social Behaviors of Data Science Students with Diverse Academic Backgrounds (Wensheng Wu)
- Let the Games Begin – Inviting Young Learners to Code (Corinna Hörmann, Marina Rottenhofer, Iris Groher and Barbara Sabitzer)
- A Debugging Learning Trajectory for Text-Based Programming Learners (Hanxiang Du, Wanli Xing and Yuanlin Zhang)
- Students' Perspectives on High School CS Education in NZ (Chamindi Samarasekara, Claudia Ott and Anthony Robins)

- Increasing Student Engagement in Computing Ethics (Bradley Beth)
- SimpleDoc: Students creating reference materials for the class (Xinhao Hou, Osama Hafez, Yang Zhang, Trevor Nagy, Shaheera Khalid and Zain Kazmi)
- Computing Crossroads: Career Diversity Highlighting Computing's Natural Diversity (Brett Becker and Daniel Gallagher)
- Assessing the cold start problem in online learning environments (Maciej Pankiewicz)
- It's About Time: Programming Time Affects Novice Behavior (Ioannis Karvelas, Joe Dillane and Brett Becker)
- Automatically Generated and Graded Program Tracing Quizzes with Feedback (Seán Russell)
- A preliminary study exploring the impact of learner resilience under enforced online delivery during the COVID-19 pandemic (Tom Crick, Tom Prickett and Julie Walters)
- An Overview of the New Science & Technology Curriculum for Wales (Tom Crick)
- Promoting Computational Thinking in Elementary School: A Narrative-Centered Learning Approach (Danielle Boulden, Andy Smith, Kimkinyona Cully, Jennifer Houchins, Rasha Elsayed, Aleata Hubbard Cheuoua, James Minogue, Kevin Oliver, Cathy Ringstaff and Bradford Mott)
- Project-based Learning of Web Systems Architecture (Chris Kerslake and Ouldooz Baghban Karimi)
- Beyond the Coder and the Code: An Exercise Structure for Fostering a People-Centered Problem-Solving Perspective with Video Scenarios (Madalene Spezialetti)
- Modeling the Growth and Spread of Infectious Diseases to Teach Computational Thinking (Meara Pellar-Kosbar, Dylan Gaines, Lauren Monroe, Alec Rospierski, Alexander Martin, Ben Vigna, Devin Stewart, Jared Perttunen, Calvin Voss, Robert Pastel and Leo Ureel II)
- The Roles and Use of Computing Terminology in Non-Computing Disciplines (Brett Becker)
- The Good, The Bad, and The Ugly of a Synchronous Online CS1 (Marco Sbaraglia, Michael Lodi, Stefano Pio Zingaro and Simone Martini)
- Going Online with International and Intensive Project (Piotr Milczarski)
- EdUCAS: An In-house CI/CD Platform with Cloud FPGAs for Agilely Conducting Computer Systems Course Projects (Ke Zhang, Yisong Chang, Ran Zhao, Zelin Wang, Mingyu Chen, Yungang Bao and Zhiwei Xu)
- Developing a Computer Science Education Community of Practice for Early-Career Academics in the UK (Tom Crick, James H. Davenport, Alan Hayes, Alastair Irons and Tom Prickett)

15:00 UTC Break

15:30 UTC Paper Sessions

Session – Teaching & learning: Online CS education II

Chair: Keith Nolan

- Exploring Student Experiences in Early Computing Courses during Emergency Remote Teaching (Mckenna Lewis, Zhanchong Deng, Sophia Krause-Levy, Adrian Salguero, William G. Griswold, Leo Porter and Christine Alvarado)
- Experience Report: Designing Massive Open Online Computer Science Courses for Inclusion (Sophia Krause-Levy, Mia Minnes, Christine Alvarado and Leo Porter)
- Towards Binary Diversified Challenges For A Hands-On Reverse Engineering Course (Christopher Stricklan and Tj Oconnor)

Session – Teaching & learning: Computing in schools

Chair: Claudio Mirolo

- Supporting Students' Computer Science Learning with a Game-based Learning Environment that Integrates a Use-Modify-Create Scaffolding Framework (Danielle Boulden, Arif Rachmatullah, Madeline Hinckle, Dolly Bounajim, Bradford Mott, Kristy Boyer, James Lester and Eric Wiebe)
- Modifying Curriculum for Novice Computational Thinking Elementary Teachers and English Language Learners (Dana Saito-Stehberger, Leiny Garcia and Mark Warschauer)
- Distributed Program Comprehension with Physical Computing: A Structure, Function, and Behavior Analysis of Think-Alouds with High School Students (Gayithri Jayathirtha and Yasmin Kafai)

Session – Teaching & learning: Testing II

Chair: Michael Kölling

- Unit Test Smells and Accuracy of Software Engineering Student Test Suites (Kevin Buffardi and Juan Aguirre-Ayala)
- Teaching testing with modern technology stacks in undergraduate software engineering courses (Scott Chow, Tanay Komarlu and Phillip Conrad)
- How Students Test: Perceptions, Practices, and Pitfalls (Gina R. Bai, Justin Smith and Kathryn Stolee)

Session – Students: Gender diversity

Chair: Bedour Alshaigy

- Increasing Women's Persistence in Computer Science by Decreasing Gendered Self-Assessments of Computing Ability (Susan Fisk, Kathryn Stolee, Lina Battestilli and Tiah Wingate)
- Inspiring High School Girls to Study Computer Science (Mirela Gutica)
- Gender Differences in Class Participation in Core CS Courses (Madison Brigham and Joël Porquet-Lupine)

16:30 UTC Panel (90 Minutes)

Exploring the use of auto-grading systems to improve the efficacy of feedback through small, scaffolded programming assignments (Angela Siegel, Eric Poitras, Tavis Bragg and Alexander Brodsky)

18:00 UTC Guided live tour through the Heinz Nixdorf MuseumsForum Computer Museum

Thursday, July 1

11:00 UTC Guided live tour of the Heinz Nixdorf MuseumsForum Computer Museum

12:00 UTC Lean Coffee Break

12:30 UTC Paper Session

Session – Teaching & learning: Engaging students I

Chair: Miranda Parker

- Encouraging Compiler Optimization Practice for Undergraduate Students through Competition (Yu Zhang, Chunming Hu, Mingliang Zeng, Yitong Huang, Wenguang Chen and Yuanwei Wang)
- Characteristics of the Student-Driven Learning Environment in Computing Education (Madeleine Lorås and Trond Aalberg)
- Mastery Learning in CS1 – An Invitation to Procrastinate? (Claudia Ott, Brendan Mccane and Nick Meek)

Session – Teaching & learning: Programming III

Chair: Anya Tafliovich

- Mind the Gap: Searching for Clarity in NCEA (Diana Kirk, Tyne Crow, Andrew Luxton-Reilly and Ewan Tempero)
- Investigating Accuracy and Perceived Value of Feedback in Peer Code Review Using Gamification (Theresia Devi Indriasari, Andrew Luxton-Reilly and Paul Denny)
- Students Struggle to Explain Their Own Program Code (Teemu Lehtinen, Aleksi Lukkarinen and Lassi Haaranen)

Session – Curriculum: The big issues

Chair: Cruz Izu

- Educating Computer Science Students about Algorithmic Fairness, Accountability, Transparency and Ethics (Maria Kasinidou, Styliani Kleanthous, Kalia Orphanou and Jahna Otterbacher)
- Deploying a strategy to unlock Big Data research activities in the West Balkan region (Damien Graux, Valentina Janev, Hajira Jabeen and Emanuel Sallinger)
- Bringing Green Software to Computer Science Curriculum - Perspectives from Researchers and Educators (João Saraiva, Ziliang Zong and Rui Pereira)

Session – CS Education Research: Bird's eye view

Chair: Brett Becker

- How Concrete Should an Abstract Be? (Simon and Juha Sorva)
- Confirmation Bias and Other Flaws in Citing Pass Rate Studies (Simon, Andrew Luxton-Reilly and Oluwatoyin Adelokun)
- Scientific Collaboration Network Analysis for Computing Education Conferences (James Zhang, Andrew Luxton-Reilly, Paul Denny and Jacqueline Whalley)

13:30 UTC Break

14:00 UTC Paper Session

Session – Teaching & learning: Engaging students II

Chair: Carsten Kleiner

- A Qualitative Study of Group Work and Participation Dynamics in a CS2 Active Learning Environment (Rutwa Engineer, Ayesha Naeem Syeda and Bogdan Simion)
- A Qualitative Study on How Students Interact with Quizzes and Estimate Confidence on Their Answers (Kartik Shah, Priscilla Lee, Daphne Barretto and Soohyun Nam Liao)
- Leveraging the ADJ framework to Improve Real-World Problem-Solving Skills in Computing Courses (Ruben Acuña and Ajay Bansal)

Session – Teaching & learning: Data

Chair: James Paterson

- Insights from Student Solutions to MongoDB Homework Problems (Ridha Alkhabaz, Seth Poulsen, Mei Chen and Abdussalam Alawini)
- A Quantitative Analysis of Student Solutions to Graph Database (Mei Chen, Seth Poulsen, Ridha Alkhabaz and Abdussalam Alawini)
- Design and assessment of a task-driven introductory data science course taught concurrently in multiple languages: Python, R, and MATLAB (Ting Xiao, Ronald Greenberg and Mark Albert)

Session – Teaching & learning: Cyber security

Chair: Joshua Adams

- Teaching a Hands-On Mobile and Wireless Cybersecurity Course (Tj Oconnor and Christopher Stricklan)
- Experience Report: Exploring the Use of CTF-based Co-Curricular Instruction to Increase Student Comfort and Success in Computing (Margaret Ellis, Liesl Baum, Kimberly Filer and Stephen H. Edwards)
- NeoCyberKG: Using an ML-enabled Knowledge Graph for Cybersecurity Education via Hands-on Labs (Yuli Deng, Zhen Zeng and Dijiang Huang)

Session – Students: Learning barriers and misconceptions

Chair: Leo Porter

- A Curated Inventory of Programming Language Misconceptions (Luca Chiodini, Igor Moreno Santos, Andrea Gallidabino, Anya Tafliovich, André Santos and Matthias Hauswirth)
- Tool-Aided Loop Invariant Development: Insights into Student Conceptions and Difficulties (Megan Fowler, Murali Sitaraman, Eileen Kraemer and Joseph Hollingsworth)
- Novices' Learning Barriers When Using Code Examples in Open-Ended Programming (Wengran Wang, Archit Kwatra, James Skripchuk, Neeloy Gomes, Alexandra Milliken, Chris Martens, Tiffany Barnes and Thomas Price)

15:00 UTC Break

15:30 UTC Poster Session Doctoral Consortium

- A necessity-driven learning design for Computer Science (Marco Sbaraglia)
- An Investigation into the Relationship Between Structured Dance Activities and Computational Thinking Skills (Fiona Fairlie)
- Teaching and Learning Computing in a Maker Community: A Longitudinal Study (Tina Vrieler)
- Evaluating the Learning by Development Action Model with CS students (Taina Lintilä)
- Automated Assessment & Feedback system for Novice programmers (Jagadeeswaran Thangaraj)
- An Automated Management System for References in Programming Code (Muftah Afrizal Pangestu)
- Exploring Novel Support Mechanisms to Improve First Stage Retention in Computing Degree Programmes (Alexander Mitchell)
- Will It POGIL? Exploring Group Participation in Synchronous, Online Collaborative Learning (Morgan Fong)
- Developing interactive visualizations focusing on computational thinking in K-12 computer science education (Tomas Šiaulys)

16:00 UTC Keynote and Closing Session

“Data Feminism: Teaching and Learning for Justice” Professor Catherine D’Ignazio, Massachusetts Institute of Technology