YIFAN (ERIC) ZHANG

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RESEARCH INTERESTS

My general research interest is **computer science education**, specifically:

- Broaden participation and data-driven learning analytics in cultural relevant music programming,
- Learning Science,
- Integration of computational thinking (CT) with non-CS subjects,
- Professional development (PD) in computer science for K-12 teachers.

EDUCATION

August 2022 – May 2024

Ph.D. in Computer Science. University of Delaware, U.S.
Research Interests: Computer Science Education, Data-Driven Learning Analytics, Computational Thinking, AI-enhanced intervention
Advisor: Dr. Lori Pollock

August 2019 – May 2022

M.S. in Computer Science. University of Delaware, U.S.
Selected Courses: Data Mining, Human Computer Interaction, Artificial Intelligence, Machine Learning
GPA: 4.0
Advisor: Dr. Lori Pollock

September 2016 – December 2017

M.S. in Management. Brunel University of London, U.K.
Thesis Project: *Impact of Brand Positioning Perception and Differentiation on Consumers' Purchase Intention*
Selected Courses: Entrepreneurship, Technology Management, Management Research.

September 2010 – June 2014

B.S. in Computer Science. Nankai University Binhai College, China.
Thesis Project: *Design and Implementation of Logistics Positioning System in Android Smartphone*
Selected Courses: Data Structure and Algorithms, Java Programming, Data Base.

PUBLICATIONS

Paper:

Yifan Zhang and Teomara Rutherford. 2024. Scaffolding Expertise: Evaluating Scaffolds for Block-Based Coding Among Experts and Novices. In 2024 International Symposium on Artificial Intelligence for Education (ISAIE 2024), September 06–08, 2024, Xi'an, China. ACM, New York, NY, USA, 6 pages. [DOI] [Paper]

Yifan Zhang, Santiago Ospina Tabares, Ray Patt, Douglas Lusa Krug, Hilary Mead, Chrystalla Mouza, David Shepherd, and Lori Pollock. (2024, June). Examining Participation and Outcomes Among Middle School Students in a Virtual Camp on Coding with Music. In International Society of the Learning Sciences Annual Meeting (ISLS). International Society of the Learning Sciences.

Douglas Lusa Krug, **Yifan Zhang**, Chrystalla Mouza, Taylor Barnett, Lori Pollock, and David C. Shepherd. 2023. Using Domain-Specific, Immediate Feedback to Support Students Learning Computer Programming to Make Music. In *Proceedings of the 2023 Conference on Innovation and Technology in Computer Science Education V. 1 (ITiCSE 2023)*. ACM, New York, NY, USA, 368–374. [DOI][Paper]

Yifan Zhang, Douglas Lusa Krug, Chrystalla Mouza, David C. Shepherd, and Lori Pollock. 2022. A Case Study of Middle Schoolers' Use of Computational Thinking Concepts and Practices during Coded Music Composition. In *Proceedings of the 27th ACM Conference on Innovation and Technology in Computer Science Education Vol 1 (ITiCSE 2022)*. ACM, New York, NY, USA, 1315. [DOI][Paper][Slides]

Poster:

Yifan Zhang, Amanda Mohammad Mirzaei, Lori Pollock, Chrystalla Mouza, and Kevin Guidry. 2021. Exploring Computational Thinking Across Disciplines Through Student-Generated Artifact Analysis. In *Proceedings of the 52nd ACM Technical Symposium on Computer Science Education* (*SIGCSE '21*). ACM, New York, NY, USA, 1315. [DOI][Abstract] [Poster]

RESEARCH EXPERIENCE

October 2024 - Present

Postdoc Researcher, Faculty of Education, Beijing Normal University, China.
Advisor: Prof. Ronghuai Huang

July 2020 – Present

Research Assistant, School of Education, University of Delaware, U.S.
Research Project: *Exploring Differences of Learning Behaviors Between Expert and Novices in Block-based Programming*

- Distinguished learning behavior patterns among students with different prior experiences
- Tailored scaffolding according to students' individual learning progress

Collaborator: Dr. Teomara Rutherford

June 2022 – May 2024

Researcher, Department of Computer and Information Sciences, University of Delaware, U.S.
Research Project: *Supporting K-8 Teachers through Co-design of a Filter-based CS Lesson Locator for Integrating CS*

- Participant Design (Co-design) of a Filter-based CS Lesson Locator
- Collect free CS curricula and lessons
- Teachers will be able to search and filter keywords, e.g., grades and coding environments, to effectively and efficiently locate online resources

Advisor: Dr. Lori Pollock

January 2021 – May 2024

Research Assistant, Department of Computer and Information Sciences, University of Delaware, U.S.
Research Project: *Exploring Student Learning Behaviors in Music Programming Process*

- Leveraged music programming as cultural motivation
- Provided positive learning experience for young students
- Shed light on learning analytics in music programming process

Advisor: Dr. Lori Pollock

June 2020 – June 2021

Research Assistant, Department of Computer and Information Sciences & School of Education, University of Delaware, U.S.

Research Project: *Exploring Computational Thinking Across Disciplines Through Student-Generated Artifact Analysis*

- Leveraged computational thinking skills for general problem solving
- Analyzed exhibition of computational thinking skills among non-computer science disciplines
- Summarized experience for instructors to design the curriculum

Advisor: Dr. Lori Pollock, Dr. Chrystalla Mouza

February 2018 – December 2018

Research Fellow, School of Information Engineering, Huanghuai University, China.

Research Project: *Studies on Compressing Component to Miniaturize Handwritten Text Recognizer by Optimizing Algorithmic Rules*

- Focused on the construction and miniaturization of offline character segmentation classifier
- Collected on-line handwritten character patterns of 360 writers, covering 7000-character classes
- Conducted comparative experiments of pattern normalization
- Used Python language to train a CNN-based character segmentation classifier

Advisor: Dr. Jinfeng Gao

September 2013 - June 2014

Undergraduate Research Assistant, Nankai University Binhai College, China

Research Project: *Design and Implementation of Logistics Positioning System in Android Smartphone*

- Designed a transportation platform for individual truck drivers receiving the orders from factories to maximize efficiency
- Designed the system including software, process flow, server, a customized database, and an Android app.

Advisor: Jiaxin Liu

PROFESSIONAL EXPERIENCE

October 2024 - Present

Postdoc Researcher, Faculty of Education, Beijing Normal University, China.

June 2022

Instructor, *Partner4CS*

- TunePad for Composing Music through Coding

September 2021 – December 2021

Teaching Assistant, Department of Computer and Information Sciences, University of Delaware, U.S.

- 21 Fall - CISC357 Engaging Youth in Computing

Coordinator/Host, Department of Computer and Information Sciences, University of Delaware, U.S.

- 21 Fall - CISC890 SIGCSE: Special Interest Group on Computer Science Education

January 2021 – June 2021

Teaching Assistant, Department of Computer and Information Sciences, University of Delaware, U.S.

- 21 Spring - CISC320 Algorithms

December 2017 – July 2019

Technology Solutions Manager, Henan Yupo Group, Henan Province, China.

- Led to develop a product traceability information system
- Led to develop an information management and communication system

June 2014 – July 2016

Assistant Market Manager, Henan Yupo Group, Henan Province, China.

- Built a new server and a new database as part of the logistics and data management project
- Developed a system for truck carriers to plan routes

HONORS AND AWARDS

2022-2024

Daniel L Chester Graduate Student Fellowship Award
University of Delaware, U.S.

September 2022

Representative of Academic Program Review
University of Delaware, U.S.

September 2014

Excellent Undergraduate Thesis of Tianjin Province
Tianjin Municipal Education Commission, China

July 2014

Second Place Winner, The National Design Competition
Computer and Software Engineering Department, Ministry of Education of China

December 2013

University Scholarship
Nankai University Binhai College, China

April 2013

Second Place Winner, The National Software Professionals Design Competition
Talent Exchange Center, Ministry of Industry and Information Technology of China

December 2011

University Scholarship
Nankai University Binhai College, China

COMMUNITY SERVICES

Reviewer of Journal of Educational Computing Research (JECR)

Reviewer of International Conference of Learning Science (ICLS)

Reviewer of Behaviour and Information Technology

Reviewer of ACM Special Interest Group on Computer Science Education (SIGCSE)

Reviewer of Interaction Design and Children Conference (IDC)

VOLUNTEERING

2022 – 2024

Peer mentor of EmPOWER project
College of Engineering, University of Delaware

2013 - 2019

Mentor to high school students from STEM disciplines for further career development
Entrepreneur Association of Henan Province, China

2014 - 2019

Volunteer to support low-income residents enrolling in the national welfare system
Federation of Labor Unions, Henan Province, China