

Benyamin T. Tabarsi

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RESEARCH INTERESTS

My research focuses on Generative AI and Computing Education, with an emphasis on developing intelligent systems that enhance learning experiences and support educators. A central aspect of my work is ensuring robustness, reliability, and adaptability in AI-driven tools to build trust and improve accuracy. My long-term goal is to leverage AI for social impact by developing scalable, human-centered technologies that address real-world needs and make educational resources more accessible and effective.

EDUCATION

North Carolina State University

Ph.D. in Computer Science

- Advisor: Dr. Tiffany Barnes, Co-Advisor: Dr. Dongkuan (DK) Xu

Expected May 2026

Raleigh, NC

Science and Research Branch of Azad University

Master of Computer Software Engineering

Aug 2019

Tehran, Iran

University of Mazanadran

Bachelor of Information Technology Engineering

Aug 2016

Babolsar, Iran

RESEARCH EXPERIENCE

Graduate Research Assistant, *North Carolina State University*

May 2022 – Present

- Analyzing coding patterns of novice programmers to boost their learning experience and develop intelligent support tools
- Conducting multiple studies on Large Language Models (LLMs), including developers' usage of LLMs, co-development of a RAG-based healthcare app, and training educators on integrating ChatGPT into class

Research Assistant, *Distributed Systems Laboratory, Azad University, Iran*

Nov 2017 – Aug 2019

- Guided students in conducting their research and led group discussions on topics concerning distributed systems, IoT, and e-healthcare

SKILLS

Languages: Python, Java, C++, R, HTML, CSS, PHP, MATLAB

Databases and Operating Systems: MySQL, Linux, MongoDB

Tools/Libraries: GIT, LlamaIndex, LangChain, Keras, PyTorch, Matplotlib, Jupyter, NLTK, Docker, Scikit-learn

PUBLICATIONS

1. **Developing LLM-Powered Trustworthy Agents for Personalized Learning Support**
 - **Benyamin Tabarsi**
 - In Proceedings of the 39th Association for the Advancement of Artificial Intelligence (AAAI), 2025
2. **MerryQuery: A Trustworthy LLM-Powered Tool Providing Personalized Support**
 - **Benyamin Tabarsi**, Aditya Basarkar, Xukun Liu, Dongkuan (DK) Xu, Tiffany Barnes
 - In Proceedings of the 39th Association for the Advancement of Artificial Intelligence (AAAI), 2025
3. **Empowering Secondary School Teachers: Creating, Executing, and Evaluating a Transformative**

Professional Development Course on ChatGPT

- Heidi Reichert, **Benyamin Tabarsi**, Zifan Zang, Cheri Fennell, Indira Bhandari, David Robinson, Madeline Drayton, Catherine Crofton, Matthew Lococo, Dongkuan (DK) Xu, Tiffany Barnes
 - In Proceedings of the 2024 IEEE Frontiers in Education (FIE 24), 2024
4. **Jigsaw: A Visual Tool for Decomposing and Planning Programming Problems**
 - Heidi Reichert, **Benyamin Tabarsi**, Thomas Price, Tiffany Barnes
 - In Proceedings of the 2024 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), 2024
 - *Best Research Paper Award*
 5. **Scaffolding Novices: Analyzing When and How Parsons Problems Impact Novice Programming in an Integrated Science Assignment**
 - **Benyamin Tabarsi**, Heidi Reichert, Nicholas Lytle, Veronica Catete, Tiffany Barnes
 - In Proceedings of the 2024 ACM Conference on International Computing Education Research (ICER)-Volume 1, 2024
 6. **Experience Helps, but It Isn't Everything: Exploring Causes of Affective State in Novice Programmers**
 - Heidi Reichert, Sandeep Sthapit, **Benyamin T. Tabarsi**, and Ally Limke, Thomas Price, Tiffany Barnes
 - In Proceedings of the 55th ACM Technical Symposium on Computer Science Education (SIGCSE) V. 2, 2024
 7. **Investigating the Impact of On-Demand Code Examples on Novices' Open-Ended Programming Experience**
 - Wengran Wang, John Bacher, Amy Isvik, Ally Limke, Sandeep Sthapit, Yang Shi, **Benyamin T. Tabarsi**, Keith Tran, Veronica Cateté, Tiffany Barnes, Chris Martens, Thomas Price
 - In Proceedings of the 2023 ACM Conference on International Computing Education Research (ICER)-Volume 1, 2023
 8. **Exploring Novices' Struggle and Progress During Programming Through Data-Driven Detectors and Think-Aloud Protocols**
 - **Benyamin Tabarsi**, Heidi Reichert, Rachel Qualls, Thomas Price, Tiffany Barnes
 - In 2023 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), 2023
 9. **Pinpoint: A record, replay, and extract system to support code comprehension and reuse**
 - Wengran Wang, Gordon Fraser, Mahesh Bobbadi, **Benyamin T. Tabarsi**, Tiffany Barnes, Chris Martens, Shuyin Jiao, Thomas Price
 - In 2022 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), 2022
 10. **How to Catch Novice Programmers' Struggles: Detecting Moments of Struggle in Open-Ended Block-Based Programming Projects using Trace Log Data**
 - **Benyamin T. Tabarsi**, Ally Limke, Heidi Reichert, Rachel Qualls, Thomas Price, Chris Martens, Tiffany Barnes
 - In Proceedings of the 6th Educational Data Mining in Computer Science Education (CSEDM) Workshop, 2022
 11. **How, when, and why do novices struggle in programming? Exploring the experiences and perceptions of common programming moments in block-based environments**
 - Heidi Reichert, Ally Limke, **Benyamin T. Tabarsi**, Thomas Price, Chris Martens, Tiffany Barnes
 - In Proceedings of the 6th Educational Data Mining in Computer Science Education (CSEDM) Workshop, 2022
 12. **ROGI: Partial Computation Offloading and Resource Allocation in the Fog-Based IoT Network Towards Optimizing Latency and Power Consumption**

- **Benyamin T. Tabarsi**, Ali Rezaee, Ali Movaghar
- In the Journal “Cluster Computing,” 2022

HONORS AND AWARDS

- **Best Technical Demonstration Award in AAAI 2025**
 - For “MerryQuery: A Trustworthy LLM-Powered Tool Providing Personalized Support for Educators and Students”
- **AAAI 2025 Student Travel Grant**
- **SPLICE Grant for participation in Educational Data Mining (2023) and Computing Education Research (2024) tracks at Carnegie Mellon University’s LearnLab Summer School**
- **Best Research Paper Award in IEEE VL/HCC 2024**
 - For “Jigsaw: A Visual Tool for Decomposing and Planning Programming Problems”
- **Ranked #1 in Cumulative GPA among the 2016 Cohort of the Master’s Program in Computer Software Engineering**

TEACHING EXPERIENCE

Instructor, *North Carolina State University, Raleigh, NC* **May – Aug 2023**

- Administered the course “Introduction to Computing Environments (E115)” by coordinating curriculum implementation, student support, and supervising teaching assistants

Graduate Teaching Assistant, *North Carolina State University, Raleigh, NC* **Aug 2021 – May 2022**

- Assisted in designing coding/written questions, grading, and office hours for “Automated Learning and Data Analysis”
- Graded assignments/exams and provided academic support during office hours for “Data Structures and Algorithms”

MENTORING EXPERIENCE

Mentor for Master’s Students

1. Teddy Chen (*North Carolina State University, NC, Fall 2024*)
2. Homak Patel (*North Carolina State University, NC, Fall 2024*)

Mentor for Undergraduate Research Interns, *North Carolina State University*

1. Ary Kumar (*North Carolina State University, NC, Fall 2024, Spring 2025*)
2. Susanna Quayle (*Fayetteville Technical Community College, NC, Summer 2024, Spring 2025*)
3. Aishwarya Radhakrishnan (*North Carolina State University, NC, Summer 2024, and Fall 2024*)
4. Michelle Jiang (*UNC Chapel Hill, NC, Summer 2024*)
5. Jonathan Hardwick (*Fayetteville Technical Community College, NC, Summer 2024*)
6. Praneel Magapu (*North Carolina State University, NC, Summer 2024*)
7. Aditya Basarkar (*North Carolina State University, NC, Summer 2024*)
8. Lavan Aditya (*North Carolina State University, NC, Spring 2024 and Summer 2024*)
9. Shiva Gadireddy (*North Carolina State University, NC, Summer 2023, Fall 2023, and Spring 2024*)
10. Samantha Gonzalez (*Kean University, NJ, Summer 2023*)
11. Yadhira Marcos-Avila (*UNC Charlotte, NC, Summer 2023*)
12. Rachel Qualls (*University of Alabama, AL, Summer 2022*)
13. Sana Mahmoud (*North Carolina State University, NC, Summer 2022*)
14. Maggie Lin (*North Carolina State University, NC, Summer 2022*)

Mentor for Teacher Research Interns, *North Carolina State University, Raleigh, NC*

1. Cherri Fennel (*Durham Public Schools, NC, Summer 2023*)
2. Matthew Lococo (*Greene County School, NC, Summer 2023*)

CURRENT RESEARCH PROJECTS

MerryQuery: An LLM-Powered Tool for Personalized Educational Support **May 2024 - Present**

- Conducting research and leading the development of an LLM-powered assistant that delivers personalized support for educators and students through adaptive, rule-based, and reliable AI-driven guidance.

ParentTeenTalk: Benchmark Dataset for Parent-Teen Health Conversation **Aug 2024 - Present**

- Developing a benchmark dataset of LLM-generated conversations for parental training in sexual health communication, along with an evaluation protocol to assist researchers in assessing AI performance in sensitive health communication contexts.

A Comprehensive Exploration of LLMs Impacts on Software Development **May 2024 - Present**

- Co-led a study using semi-structured interviews with 16 professional developers, analyzing how LLMs impact coding tasks, support learning, and development processes.

A Systematic Literature Review on the Intersection of LLMs and Computing Education **May 2023 - Present**

- Conducting a systematic review analyzing research on LLMs in computing education to identify key challenges, use cases, opportunities, and future research directions.

PROFESSIONAL SERVICE AND MEMBERSHIPS

Reviewer

- International Joint Conference on Artificial Intelligence (IJCAI) **2025**
- ACM Special Interest Group (SIG) on Knowledge Discovery and Data Mining (KDD) **2025**
- International Conference on Artificial Intelligence in Education (AIED) **2025**
- AAAI 2025 Spring Symposium: GenAI@Edge: Empowering Generative AI at the Edge **2025**
- ACM The International Conference on Learning Analytics & Knowledge (LAK) **2025**
- IEEE Global Engineering Education Conference (EDUCON) **2025**
- ACM Technical Symposium on Computer Science Education (SIGCSE) **2023 - 2025**
- IEEE Frontiers in Education (FIE) **2024**

Invited Talks and Panels

- “MerryQuery: An AI-Powered Tool for Personalized Learning Support”
 - Presented to the students of the course “Intro to Educational Innovation & Entrepreneurship (ECI 519-601)” at NC State University in Fall 2024
- NC State Doctoral Recruiting Day - Graduate Student Q&A Roundtable
 - Shared insights on PhD experience, balancing research and coursework, and strategies for success in graduate school in Spring 2024
- “From the Internet of Things to Fog Computing”
 - Delivered to the students of the course “Distributed Systems” at Azad University in 2018

IEEE Student Member **2018 & 2023 – Present**

ACM Student Member **2023 – Present**

Workshop Instructor and Mentor, *North Carolina State University* **June 2023 – June 2024**

- Mentored the development and co-led instruction of workshop series for K-12 teachers on integrating ChatGPT into a classroom across three iterations

Summer Camp Teacher and Curriculum Consultant, *North Carolina State University* **July 2022**

- Led a group of 20+ high school students in a one-week block-based programming camp, focusing on games and art in Snap!