Benyamin T. Tabarsi

btaghiz@ncsu.edu ❖ (984) 330-0340 ❖ Raleigh, NC ❖ Google Scholar ❖ Website ❖ LinkedIn

EDUCATION

North Carolina State University — Expected May 2026
Ph.D. in Computer Science — *Raleigh, NC*
- Courses: Design and Analysis of Algorithms, Automated Learning and Data Analysis, HCI, Text Mining — GPA: 3.96/4.0

Science and Research Branch of Azad University — Aug 2019
Master of Computer Software Engineering — *Tehran, Iran*
- Courses: Data Mining, Big Data Analytics, Advanced Software Engineering, Software Architecture — GPA: 19.31/20 (A+)
- Ranked #1 in cumulative GPA among the 2016 cohort of the Master's program in Computer Software Engineering

University of Mazanadran — Aug 2016
Bachelor of Information Technology Engineering — *Babolsar, Iran*
- Courses: Object-Oriented Programming, Data Structures, Database Systems, Software Engineering, Artificial Intelligence

SKILLS

Languages: Java, Python, C++, R, HTML, CSS, JavaScript, PHP
Databases and Operating Systems: MySQL, Windows, macOS, Linux
Tools/Libraries: GIT, IntelliJ IDEA, Eclipse, VS Code, PyCharm, Scikit-learn, NumPy, SciPy, Pandas, Keras, Matplotlib, Jupyter, Hadleyverse (ggplot2, dplyr, tidyr, readr, stringr), MATLAB, CVX, YALMIP, Microsoft Office, Google Workspace, Google Analytics, MySQL Workbench, Adobe Photoshop

EXPERIENCE

Graduate Research Assistant, *Game2Learn Lab at North Carolina State University, Raleigh, NC* — **May 2022 – Present**
- Analyzing coding patterns of novice programmers to boost their learning experience and develop intelligent support tools
- Conducting diverse studies on Large Language Models (LLMs), including developers' usage of LLMs, co-development of an RAG-based healthcare app, and training educators on integrating ChatGPT into their classrooms

Mentor for Undergraduate Research Interns, *North Carolina State University, Raleigh, NC* — **May – Aug 2022 & May 2023 – Present**
- Mentored seven undergraduate research interns across the summers of 2022 and 2023, Fall of 2023, and Spring of 2024, guiding research and development plans and contributing to projects that resulted in two published papers and one currently in progress

Instructor for Introduction to Computing Environments (E115), *North Carolina State University, Raleigh, NC* — **May – Aug 2023**
- Administered the course by coordinating curriculum implementation, student support, and supervising teaching assistants

Mentor for Teacher Research Interns, *North Carolina State University, Raleigh, NC* — **May – Aug 2023**
- Guided research and professional development for RET program teachers, enhancing their understanding of LLMs' uses and challenges

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"

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

Freelance Full Stack Web Developer — **July 2013 – Feb 2016**
- Designed and developed three websites, offering ongoing support for one (PHP, HTML, CSS, Bootstrap, and Google Analytics)

PROJECTS

Large Language Models (LLMs) and Retrieval Augmented Generation (RAG)
Game2Learn Lab at North Carolina State University, Raleigh, NC
- **ChatLearn: An AI-powered tool for Providing Patients with the Latest Research Based on Their Medical Queries (*In Progress*)**
  - Conducting in-depth research and contributing to the design of a RAG-based architecture for ChatLearn's backend
- **MerryQuery: An AI-Powered Chatbot for Personalized Learning Support (*In Progress*)**
  - Designing an agentic RAG model to provide students with tailored responses based on course materials and instructor preferences
- **Understanding How Software Developers Use ChatGPT (*In Progress*)**
  - Contributed to study design, conducted semi-structured interviews with developers, and performed thematic analysis (Airtable)

Data Analysis
Game2Learn Lab at North Carolina State University, Raleigh, NC
- **Detecting Novice Programmers' Struggling Moments by Analyzing Their Coding Log Data**

- Identified struggling patterns in the programming log data of novice programmers (Python, SQL)
- Helped in adding modules to iSnap (block-based programming environment) for showing feedback (JavaScript)
- Collaborated with the research team in programming, analysis, and survey design (Git, Google Colab, and Qualtrics)
- Published this work as two papers in Data Mining in CS Education (CSEDM) Workshop, 2022 ([Paper 1](#)|[Paper 2](#))

○ **Exploring Novices' Struggle and Progress During Programming Through Data-Driven Detectors and Think-Aloud Protocols**
- Led a think-aloud study to validate a Struggle-Progress Detector (SPD) algorithm's effectiveness in identifying student programming struggles and progress, resulting in a 72.5% F1 score, along with insights for enhancing future struggle detectors (Java, Python)
- Published this work in IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), 2023 ([Paper](#))

○ **Exploring Causes of Affective States in Novice Programmers**
- Collaborated in study design and adding an affect-checking pop-up to iSnap (JavaScript), conducting retrospective interviews and thematic analysis (Airtable)
- Published the result of this work in SIGCSE Technical Symposium, 2024 ([Poster](#))

○ **Investigating the Impacts of Scaffolding on Novice Programmers (*In Progress*)**
- Analyzed the Parson's Problems' impact on the coding skills of 199 students using a Struggle and Progress Detection (SPD) method, finding scaffolded tasks led to higher grades and less time

EXTRACURRICULAR ACTIVITIES

Conference Reviewer
- Evaluated submissions and provided detailed feedback as a program committee member for SIGCSE TS 2023 and SIGCSE TS 2024 and as a technical program committee member for IEEE FIE 2024

Workshop Instructor and Mentor, *North Carolina State University, Raleigh, NC*   **June 2023 and Feb 2024 – Present**
- Mentored three undergraduates in developing the workshop curriculum for K-12 teachers about integrating ChatGPT into classrooms
- Led instruction for sessions on Prompt Engineering, ethical considerations, and AI tutors

Summer Camp Teacher and Curriculum Consultant, *North Carolina State University, Raleigh, NC*   **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*!*