Christopher Zhang Cui

(919) 917-6300
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github.com/ChristopherZC
Google Scholar

Research Interests: Natural Language Processing, Text Generation, Foundational Models, Reinforcement Learning, Knowledge Graphs, Game AI, Education Technologies

Education

University of California, San Diego September 2024—Expected: May, 2029
- PhD in Computer Science and Engineering
- Advisor: **Dr. Prithviraj Ammanabrolu**
- Research Areas: **Natural Language Processing**, **Reinforcement Learning**

Georgia Institute of Technology August 2021—May, 2024
- M.S. in **Interactive Intelligence**; GPA: 4.00/4.00
- Advisors: **Dr. Mark O. Riedl**, **Dr. Thad Starner**
- Research Areas: **Natural Language Processing**, **Reinforcement Learning**, **Foundation Models**, **Educational Technologies**, Text Generation
- Relevant Coursework: Artificial Intelligence, Natural Language Processing, Machine Learning, Deep Learning, Graduate Algorithms, Qualitative Methods

University of North Carolina, Chapel Hill August 2016—May 2020
- B.S in Computer Science; GPA: 3.72/4.00
- Advisors: **Dr. Gary Bishop**, **Dr. Prasun Dewan**
- Research Areas: **Computer Vision**, Education Technologies
- Relevant Coursework: Programming System Languages, Distributed Systems, Data Structures

Research Experience

Graduate Research Assistant **January 2023 — July 2024**
Georgia Tech, under Dr. Thad Starner *Atlanta, Georgia*
- Assisted in securing funding by presenting progress in development and deployment of Edtools to various faculty, including the past and present Deans of the College of Computing.
- Technical Co-Lead of **Socratic Mind**: Using **Foundation Models** to create scalable, interactive, oral assessments.
  - Winner of the **2023-24 Tools Competition in Educational Technologies**
  - Garnered interest from 15+ professors across 7 universities
  - Successfully served over 1,000 college students in graduate and undergraduate level courses
- Assisting in development, testing and deployment of plagiarism detection software by integrating identifying, digital watermarks into coding assignments
- Leading team of researchers in investigation of **neural network** approaches for automatic plagiarism detection.
- Advising further development of **anti-plagiarism software for online exams**.
- Leading team of researchers in development of IDE Extension for detection of student difficulty in coding assignments(**Impasse**).
- Leading team of researchers in uses of foundation models in the classroom.
- Assisted in securing funding by presenting progress in development and deployment of Edtools to various faculty.

Graduate Research Assistant **March 2022 — May 2024**
Georgia Tech, under Dr. Mark O. Riedl *Atlanta, Georgia*
- Explored the potential of combining **prompting with Foundation Models** with symbolic-based planning approaches to produce coherent story plot skeletons by using GPT-J with prompt-chaining to perform commonsense inference
- Extended LIGHT **Textworld**'s map generation by streamlining map creation for user-generated layouts
- Trained and tested **Reinforcement Learning Agents** in the LIGHT Textworld environment by developing a wrapper to integrate various agent architectures with the LIGHT game engine.
- Exploring rapid, few-shot training of **generalized Reinforcement Learning** Agents by tuning specialized prompts for specific tasks
- Exploring methods for **few-shot, Ensemble Learning** in Reinforcement Learning Agents via attention-based expert guidance.

Undergraduate Research Assistant **July 2018 — May 2020**
UNC Chapel Hill, under Dr. Gary Bishop *Chapel Hill, North Carolina*
- Developed an ML-driven algorithm for **detection of fixation hotspots** in videos where ground-truth information is no longer available by analyzing pixel gradient changes

Undergraduate Research Assistant **January 2020 — May 2020**
UNC Chapel Hill, under Dr. Prasun Dewan *Chapel Hill, North Carolina*
- Gained insights on student difficulty in programming assignments by **quantitative analysis** on data from students' class performance and keystrokes while programming and debugging.

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Publications

Leveraging Past Assignments to Determine If Students Are Using ChatGPT for Their Essays
Yuhui Zhao, Chunhao Zao, Rohit Sridhar, Christopher Cui, Thad Starner
Published in Proceedings of the Tenth ACM Conference on Learning@ Scale 2024

Examinator v4.0 : Cheating Detection in Online Take-Home Exams
Christopher Cui, Jui-Tse Hung*, Vaibhav Malhotra, Hardik Goel, Raghav Apoorv, Thad Starner*
*shared first author
Published in Proceedings of the Tenth ACM Conference on Learning@ Scale 2024

Socratic Mind: Scalable Oral Assessment Powered By AI
Jui-Tse Hung, Christopher Cui, Diana M. Popescu, Saurabh Chatterjee, Thad Starner
Published in Proceedings of the Tenth ACM Conference on Learning@ Scale 2024

Answer Watermarking: Using Answer Generation Assistance Tools to Find Evidence of Cheating
Christopher Cui, Jui-Tse Hung, Pranav Sharma, Saurabh Chatterjee, Thad Starner
*shared first author
Published in Proceedings of the Tenth ACM Conference on Learning@ Scale 2024

A Mixture-of-Experts Approach to Few-Shot Task Transfer in Open-Ended Text Worlds
Christopher Cui, Xiangyu Peng, Mark Riedl
Pre-print

Thespian: Multi-Character Text Role-Playing Game Agents
Christopher Cui, Xiangyu Peng, Mark O. Riedl
Published in Proceedings of the AIIDE Workshop on Experimental AI in Games (EXAG) 2023

Story Shaping: Teaching Agents Human-like Behavior with Stories
Xiangyu Peng, Christopher Cui*, Wei Zhou, Renee Jia, Mark O. Riedl*
*shared first author
Published in Proceedings of the 19th AAAI Conference on Artificial Intelligence in Interactive and Digital Entertainment (AIIDE) 2023

Examinator v3.0: Cheating Detection in Online Take-Home Exams
Jui-Tse Hung, Christopher Cui, Varun Agarwal, Saurabh Chatterjee, Raghav Apoorv, Rocko Graziano, Thad Starner
Published in Proceedings of the Tenth ACM Conference on Learning@ Scale 2023

Neural Story Planning
Anbang Ye, Christopher Cui, Taiwei Shi, Mark O. Riedl
Published in Proceedings of the AAAI Workshop on Creative AI Across Modalities 2023

Work Experience

Head Graduate Teaching Assistant — **Janurary 2024 — May 2024**
Georgia Institute of Technology — *Atlanta, Georgia*
- CS3600, Instroduction to Artificial Intelligence(Spring 2024), *Dr. Thad Starner*

Head Graduate Teaching Assistant — **August 2023 — December 2023**
Georgia Institute of Technology — *Atlanta, Georgia*
- CS6601, Artificial Intelligence(Fall 2023), *Dr. Thomas Ploetz*

Graduate Teaching Assistant — **August 2022 — Summer 2023**
Georgia Institute of Technology — *Atlanta, Georgia*
- CS7650, Natural Language Processing(Summer 2023), *Dr. Mark Riedl*
- CS3600/6601, Artificial Intelligence(Spring 2023), *Dr. Thad Starner*
- CS6601, Artificial Intelligence(Fall 2022), *Dr. Thomas Ploetz*

Undergraduate Teaching Assistant — **January 2020 — May 2020**
UNC Chapel Hill — *Chapel Hill, North Carolina*
- CS590, Software Architecture(Spring 2020), *Dr. Jeffrey Terrell*

Undergraduate Teaching Assistant — **August 2019— December 2019**
UNC Chapel Hill — *Chapel Hill, North Carolina*
- CS401, Foundations of Programming(Fall 2019), *Dr. Ketan Mayer-Patel*

Skills

- Technical: Natural Language Processing, Reinforcement Learning, Machine Learning, Knowledge Graphs, Computer Vision, Qualitative/Quantitative Analysis, Web development
- Languages: Python, C/C++, Java, Kotlin, Javascript
- Tools and Framework: pyTorch, Tensorflow, Git, scikit-learn, Numpy, ntlk, Docker, pandas