

# Xiaoyi Tian

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## SKILLS

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**User-Centered Research:** Contextual inquiry, interview, survey, storyboard, usability testing, persona, qualitative coding, dialogue act tagging, ethnography, case study

**Statistical Analysis:** R, SPSS, JMP, Stata

**Programming Languages and Frameworks:** Python, HTML, CSS, Bootstrap, Javascript, Java, C, VB, SQL, MATLAB, Blazor, React, Blockly

## EDUCATION

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**Ph.D. in Human-Centered Computing** 2020 - present  
University of Florida Gainesville, FL

**M.S. in Information Science** 2018 - 2020  
University of Pittsburgh Pittsburgh, PA

**B.Mgmt. in Management Science** 2014 - 2018  
Anhui University Hefei, China

## EXPERIENCE

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**Graduate Research Assistant** | Advisor: Kristy Boyer 08/2020 - present  
LearnDialogue Lab, University of Florida Gainesville, FL

- Designed and developed a conversational AI development environment: *AMBY*, that augments Dialogflow with rich visual features, AI conceptual scaffolding and dual input modalities (text and speech) for middle school students
- Modeled linguistic alignment and its relationship with satisfaction outcome in dialogues of middle school students collaborative programming
- Examined affective states and problem-solving behaviors in an adaptive block-based programming environment for novice learners

**Research Intern** | Supervisors: Michael Madaio and Amy Ogan 10/2019 - 07/2020  
Human-Computer Interaction Institute, Carnegie Mellon University Pittsburgh, PA

- Automated data collection for a child literacy system used by 500+ participants in Côte d'Ivoire over 8 months
- Visualized user phonological awareness curriculum progression of 8 units and 1,000+ weekly logs of learning actions

**Research Assistant** | Supervisor: Erin Walker 04/2019 - 05/2020  
Facet Lab, University of Pittsburgh Pittsburgh, PA

- Conducted qualitative research on multi-sessions rapport management of middle school learners with a social robot
- Utilized Independent Component Analysis (ICA) to model linguistic rapport components extracted from human coding and automated LIWC measurements

## PROJECTS

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**Camp DIALOGS** | RA project at UF 08/2021 - Present  
Summer camps for middle school students on AI learning and co-creation of spoken conversational apps

- Facilitated three two-week AI summer camps and students' co-creation of conversational apps
- Conducted contextual inquiry and usability studies with 46 middle school students and 11 adults
- Designed, developed and iteratively refined AMBY: a development environment for youth to create conversational agents

**Prime: Student Modeling in Introductory Programming** | RA project at UF 08/2020 - Present  
Research on novice programmers' problem-solving behaviors and their code progressions in an adaptive block-based programming environment

- Embedded code snapshots by converting Python code to Abstract Syntax Tree (AST) and to vectors using AST2vec algorithm

- Clustered student progression trajectory based on distances between series of student code embeddings using Dynamic Time Warping (DTW)
- Modeled the correlation between student frustration, problem-solving behaviors and other characteristics using MANCOVA
- Evaluated multi-level hint effectiveness and student coding states using logs of interactions and 295,445 code snapshots from 1000+ students

**Linguistic Alignment in Collaborative Learning Dialogues** | Course project (lead) at UF 01/2021 - present

Research on the role of linguistic alignment in middle school students collaborative problem solving dialogues

- Parsed the syntactic structure and extracted lexical types for both task-relevant and non-task words
- Calculated linguistic alignment on both syntax level and lexicon level for each dialogue exchange
- Performed Bayesian mixed-effect modeling on linguistic alignment and students' satisfaction toward their partner

## AWARDS AND HONORS

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<b>Gartner Group Graduate Fellowship</b> , University of Florida	2022
<b>Outstanding Undergraduate Thesis (Top 1% in the Class)</b> , Anhui University	2018
<b>Academic Excellence Scholarship</b> , Anhui University	2015 & 2016 & 2017
<b>"Merit Student"</b> , Anhui University	2015 & 2017

## PUBLICATIONS

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### Journal Articles

- J2 **Let's Talk It Out: A Chatbot for Effective Study Habit Behavioral Change**  
Xiaoyi Tian, Zak Risha, Ishrat Ahmed, Arun Balajiee Lekshmi Narayanan, Jacob Biehl.  
*Proceedings of the ACM on Human-Computer Interaction*. 5, CSCW1. April. 2021.
- J1 **Online Educational Information Quality Modeling and Perceived Difference Comparison**  
Xiaoyi Tian, Jing Li, Qin Yu.  
 In *Journal of Hefei Normal University*. 2016, 34(5).

### Conference Papers

- C4 **Applying Cognitive Load Theory to Examine STEM Undergraduate Students' Experiences in An Adaptive Learning Environment: A Mixed-Methods Study**  
 Dolly Bounajim, Arif Rachmatullah, Madeline Hinckle, Bradford Mott, James Lester, Andy Smith, Andrew Emerson, Fahmid Morshed Fahid, Xiaoyi Tian, Joseph B Wiggins, Kristy Elizabeth Boyer, Eric Wiebe.  
*Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. October. 2021.
- C3 **Modeling Frustration Trajectories and Problem-Solving Behaviors in Adaptive Learning Environments for Introductory Computer Science**  
Xiaoyi Tian, Joseph B. Wiggins, Fahmid Morshed Fahid, Andrew Emerson, Dolly Bounajim, Andy Smith, Kristy Elizabeth Boyer, Eric Wiebe, Bradford Mott, James Lester.  
*Proceedings of International Conference on Artificial Intelligence in Education (AIED)*. July. 2021.
- C2 **Progression Trajectory-Based Student Modeling for Novice Block-Based Programming**  
 Fahmid Morshed Fahid, Xiaoyi Tian, Andrew Emerson, Joseph B. Wiggins, Dolly Bounajim, Andy Smith, Eric Wiebe, Bradford Mott, Kristy Elizabeth Boyer, James Lester.  
*Proceedings of the 29th ACM Conference on User Modeling, Adaptation and Personalization (UMAP)*. July. 2021.
- C1 **Understanding Rapport over Multiple Sessions with a Social, Teachable Robot**  
Xiaoyi Tian, Nichola Lubold, Leah Friedman, Erin Walker.  
*Proceedings of International Conference on Artificial Intelligence in Education (AIED)*. July. 2020.

### Workshop Papers and Posters

- W2 **Early Design of a Conversational AI Development Platform for Middle Schoolers**  
 Amit Kumar, Xiaoyi Tian, Mehmet Celepkolu, Maya Israel, Kristy Elizabeth Boyer.  
 Poster in *2022 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*. September. 2022.
- W1 **Dominance as an Indicator of Rapport and Learning in Human-Agent Communication**  
 Amanda Buddemeyer, Xiaoyi Tian, Erin Walker.  
 Student Research Workshop in *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (ACL)*. July. 2020.

## ACADEMIC AND COMMUNITY SERVICES

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Microsoft TEALS volunteer, teacher for high school computer science (CS1, Python)	08/2022 - present
Reviewer of International Conference on Educational Data Mining (EDM) 2022	
Reviewer of ACM Conference on Computer-Supported Cooperative Work (CSCW) 2020	

## INVITED TALKS AND SEMINARS

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<b>Guest speaker of AI workshop for Florida middle school teachers</b> , University of Florida <i>Camp DIALOGS: Teaching Conversational AI in Middle School Summer Camps</i>	07/2022
<b>Guest speaker of undergraduate HCI course</b> , University of Florida <i>Let's talk it out: A chabot for effective study behavioral change</i>	03/2021

*Last update: 9/14/2022*