Xiaoyi Tian

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Education

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

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

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

Experience

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

- Modeled student engagement and collaboration patterns using multimodal data streams (e.g., facial expressions, acoustics and dialogue) during middle school students' co-creation of conversational apps
- Understood affective states and problem-solving behaviors in adaptive programming environments

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
- Created data pipelines from 30+ MYSQL database tables and monitored system usage using Python and R
- Visualized user curriculum progression of 8 units and 1,000+ weekly logs of learning actions
- Plotted children's learning curve of phonological awareness skills acquisition and modeled students using Bayesian Knowledge Tracing (BKT)

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
- Coded multiple-sessions human-robot dialogue on rapport strategies and dominance behaviors
- Utilized Independent Component Analysis (ICA) to model linguistic rapport components extracted from human coding and automated LIWC measurements

Projects

Camp DIALOGS | *RA project at UF* — 08/2021 - Present

- Facilitated Summer camps for middle school students on AI learning and co-creation of conversational apps
- Classified student engagement and collaboration patterns using multimodal data streams (facial expression, acoustics and dialogue) from 7 student groups during approximately 20 hours of collaboration in total

Prime: Student Modeling in Introductory Programming | *RA project at UF* — 08/2020 - Present

- Investigated novice programmers' problem-solving behaviors and code progression in a block-based programming environment
- Embeded student code snapshots using Abstract Syntax Tree (AST) and AST2vec algorithm
- Clustered student progression trajectory based on distances between series of student code embeddings
- Modeled the correlation between student frustration, problem-solving behaviors as well as incoming characteristics
- Evaluated multi-level hint effectiveness and student coding states using logs of interactions and 295,445 code snapshots from 1000+ students

Modeling Linguistic Alignment in dialogues | *Course project (lead) at UF* — 01/2021 - present

- Investigated the role of linguistic alignment in middle school students collaborative problem solving
- Modeled linguistic alignment on both syntax level and lexicon level among 7812 utterances
- Performed Beyasian mixed-effect model on linguistic alignment and students' satisfaction toward their partner

StudyBuddy: a Chatbot for Effective Study Habits | *Collaborative project (lead) at Pitt* — 09/2019 - 10/2020

- Utilized mix-method to investigate the feasibility of chatbots for study behavioral change of college students
- Formed design inquiry by interviewing with 3 peer tutors and surveying 87 freshmen
- Developed a chatbot prototype in Slack using DialogFlow and Slack API
- Conducted in-depth interviews with 8 students, 5 faculty and a usability survey with 118 students
- Offered design recommendations for chatbots on building trust with users, incorporating gender and individual differences, importance of context, balancing between immediate help and long-term support

Social Media Attention and Organizational Fundraising | *Independent project at Pitt* 01/2019 - 04/2019

- Performed quantitative analysis 414,312 Twitter posts of local non-profit organizations and their donations records
- Defined measurements of social media strategies and public attention
- Conducted negative-binomial regression analysis to understand relationships between social media strategies, public attention and donation gained

Publications

Please check out my **Google Scholar** page for a full list of publications.

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.

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.

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.

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.

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.

Online Educational Information Quality Modeling and Perceived Difference Comparison
Xiaoyi Tian, Jing Li, Qin Yu.
In *Journal of Hefei Normal University*. 2016, 34(5).

Skills

Programming Languages and Frameworks: Python, HTML, CSS, Bootstrap, Javascript, Java, C, VB, SQL, MATLAB, Blazor, React, Blockly
User-Centered Research: Interview, survey, storyboard, persona, usability test, qualitative coding, dialogue act tagging
Statistical Analysis: R, SPSS, JMP, Stata

Awards and Honors

Outstanding Undergraduate Thesis (Top 1% in the Class), Anhui University 07/2018
Academic Excellence Scholarship, Anhui University 2015 & 2016 & 2017
'Merit Student', Anhui University 2015 & 2017

Invited Talks and seminars

Guest speaker of undergraduate HCI course, University of Florida 03/2021
Let's talk it out: A chabot for effective study behavioral change

Services

Reviewer of CSCW 2020

Last update: 10/28/2021