

# Zhilin Zhang

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## Educational Background

University of Illinois at Urbana-Champaign (UIUC), Urbana, IL, USA

01/2017 - 08/2021

Master of Science in Computer Science (with thesis)

Advisors: Lawrence Angrave and Karrie Karahalios

Bachelor of Science in Computer Science (with thesis)

Awards: Dean's List (2017 - 2020)

**Published 6 full papers, graduated with the Highest Honors (GPA: 3.92/4.0)**

Research Interests:

Human-Computer Interaction, Artificial Intelligence, VR/AR

Social Computing, Crowdsourcing/Learnersourcing, Education, Accessibility

Relevant Coursework:

Applied Machine Learning, Text Retrieval and Mining, Virtual Reality, Art and Science of Web Programming, Human-Computer Interaction, Experimental Methods for HCI, Social Spaces on the Internet, Database Systems, Distributed Systems, Operating Systems, Data Structures and Algorithms, Computer Architectures, etc.

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## Project Highlights

ClassTranscribe Team                      UIUC                      Faculty Supervisor: Lawrence Angrave                      05/2019 - 08/2021

- ClassTranscribe is a Microsoft sponsored online learning platform (ReactJS, ASP.NET Core)
- Used Python (Pandas, NumPy and SciPy), statistical techniques (e.g., Mann-Whitney tests, chi-square tests), data mining techniques (e.g., k-means clustering), and qualitative analysis techniques (e.g., grounded-theory approach) to analyze behavioral data of 1,894 users totaling more than 5 million interactions
- Studied students' attitudes, behaviors, and learning outcomes from using ClassTranscribe
- **Published 3 papers at SIGCSE [1] and ASEE [2, 6], and won the Honorable Mention Awards**

Social Spaces Group                      UIUC                      Faculty Supervisor: Karrie Karahalios                      08/2020 - 08/2021

- Applied a grounded-theory approach to code the qualitative data from a 22-participant interview study
- Investigated students' folk theories, interaction strategies, perceived accuracy, satisfaction, and fairness towards an NLP-based grading system
- **Published 1 paper at CHI 2021 [3]**

Strategic Instructional Innovations                      UIUC                      Faculty Supervisor: Hongye Liu                      08/2020 - 08/2021

- Conducted large-scale surveys and interviews across 49 engineering courses at UIUC
- Studied how to improve class accessibility for all learners, especially females and students with disabilities
- **Published 1 paper at ASEE 2021 [5], and won the 3<sup>rd</sup> Best Paper Awards**

Data and Information Systems Lab                      UIUC                      Faculty Supervisor: ChengXiang Zhai                      08/2020 - 08/2021

- Came up with the original research ideas, designed and implemented the in-class experiments
- Designed, conducted, and analyzed semi-structured interviews with 18 participants
- Experimented learnersourcing for improving captions in video-based online learning
- **Paper is in submission [7]**

Social Computing Systems Lab	UIUC	Faculty Supervisor: Yang Wang	05/2020 - 08/2020
<ul style="list-style-type: none"> <li>- Led the design and implementation of a 20-participant user study on an integrated friendsourcing tool that helped visually impaired people with inaccessible web tasks</li> <li>- Investigated users' attitudes towards the tool, regarding friendsourcing vs. crowdsourcing, paid vs unpaid, privacy concerns, and impacts on relationship</li> <li>- <b>Published 1 paper at SOUPS 2021 [4]</b></li> </ul>			
Data Driven Design Group	UIUC	Faculty Supervisor: Ranjitha Kumar	01/2020 - 08/2020
<ul style="list-style-type: none"> <li>- Designed and developed an Android app using Java and the Android Accessibility Service to automatically record users' interaction data (including gestures, screenshots, and view hierarchies) for interaction mining</li> </ul>			
Virtual Reality Lab	UIUC	Faculty Supervisor: Eric Shaffer	01/2019 - 05/2019
<ul style="list-style-type: none"> <li>- Developed a VR game <i>Ninja World</i> on Oculus with Unity</li> <li>- Wrote C# code to implement several attacking modes of the Ninja</li> <li>- Conducted user studies to enhance user experience on decreasing dizziness, improving the prompts and controlling gestures, and enriching the boss fight</li> </ul>			

## Teaching Experiences

Computer Science Department	Grainger College of Engineering	University of Illinois at Urbana-Champaign	
<b>Teaching Assistant, CS 225: Data Structures</b>			Spring 2021
<ul style="list-style-type: none"> <li>- Taught 2 discussion/lab sections (45 students in each section)</li> <li>- Gave short lectures, graded homework, held office hours</li> <li>- Led 15 groups of students on final projects (4 students in each group)</li> </ul>			
<b>Teaching Assistant, CS 410: Text Information Systems</b>			Fall 2020
<ul style="list-style-type: none"> <li>- Moderated final projects, created quiz questions, and held office hours</li> </ul>			
<b>Course Assistant, CS 498: Art and Science of Web Programming</b>			Spring 2020
<b>Course Assistant, CS 125: Intro to Computer Science</b>			Fall 2017

## Service

**Reviewer:** SIGCSE 2021, SIGCSE 2022

- Reviewed 5 poster submissions for SIGCSE 2021 and SIGCSE 2022
- Gave scores and feedback for each submission

## Skills

**Programming Languages:** Java, C / C++, Python, C#, MIPS, Haskell, etc.

**Web Development:** JavaScript, HTML5, CSS3, React.js, Node.js, SQL(MySQL) / NoSQL(MongoDB)

**Mobile Development:** Android

**VR Development:** Unity, Oculus

**ML Frameworks:** Scikit-Learn, PyTorch, TensorFlow

**(Publications on the next page)**

# Publications

(\* = Equal Contribution)

## CONFERENCE FULL PAPERS

- [7] Bhavya\*, Si Chen\*, **Zhilin Zhang\***, Tiffany Wenting Li, Yun Huang, Lawrence Angrave, ChengXiang Zhai. Advancing Learnersourced Caption Editing for Video-Based STEM Education. (**In Submission**)
- [6] **Zhilin Zhang\***, Bhavya\*, Lawrence Angrave, Ruihua Sui, Rob Kooper, Chirantan Mahipal. (2021, July). How Students Search Video Captions to Learn: An Analysis of Search Terms and Behavioral Timing Data. In *Proceedings of the 2021 American Society for Engineering Education Annual Conference & Exposition*. (**ASEE 2021**)
- [5] Jenny Amos\*, **Zhilin Zhang\***, Lawrence Angrave\*, Hongye Liu\*, Yiyin Shen. (2021, July). A UDL-Based Large-Scale Study on the Needs of Students with Disabilities in Engineering Courses. In *Proceedings of the 2021 American Society for Engineering Education Annual Conference & Exposition*. (**ASEE 2021**)  
🏆 3rd Best Paper Award & 2nd Best Diversity, Equity, and Inclusion Paper Award
- [4] Zhuohao Zhang, **Zhilin Zhang**, Haolin Yuan, Natã Barbosa, Sauvik Das, Yang Wang. (2021, August). WebAlly: Making Visual Task-based CAPTCHAs Transferable for People with Visual Impairments. In *Proceedings of the Symposium on Usable Privacy and Security* (pp. 281-298). (**SOUPS 2021**)
- [3] Silas Hsu\*, Tiffany Wenting Li\*, **Zhilin Zhang**, Max Fowler, Craig Zilles, Karrie Karahalios. (2021, May). Attitudes Surrounding an Imperfect AI Autograder. In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (pp. 1-15). (**CHI 2021**)
- [2] Lawrence Angrave, Karin Jensen, **Zhilin Zhang**, Chirantan Mahipal, David Mussulman, Christopher Schmitz, Robert Baird, Hongye Liu, Ruihua Sui, Maryalice Wu, and Rob Kooper. (2020, June). Improving Student Accessibility, Equity, Course Performance, and Lab Skills: How Introduction of ClassTranscribe is Changing Engineering Education. In *Proceedings of the 2020 American Society for Engineering Education Annual Conference & Exposition*. (**ASEE 2020**)  
🏆 Best Diversity, Equity & Inclusion Paper Honorable Mention
- [1] Lawrence Angrave, **Zhilin Zhang**, Genevieve Henricks-Lepp, and Chirantan Mahipal. (2020, February). Who Benefits? Positive Learner Outcomes from Behavioral Analytics of Online Lecture Video Viewing using ClassTranscribe. In *Proceedings of the ACM Symposium on Computer Science Education* (pp. 1193-1199). (**SIGCSE 2020**)

## THESES

- [t.2] **Zhilin Zhang**. Attitudes, Behaviors, and Learning Outcomes from Using ClassTranscribe, a UDL-Featured Video-Based Online Learning Platform with Learnersourced Text-Searchable Captions. (Master's Thesis, University of Illinois at Urbana-Champaign, 2021)
- [t.1] **Zhilin Zhang**. What Benefits? Exploring the Influences of Student Behaviors in Video-Based Online Learning. (Undergraduate Senior Thesis, University of Illinois at Urbana-Champaign, 2020)

## WORKSHOPS, PANELS, POSTERS, TALKS

- [o.5] Silas Hsu, **Zhilin Zhang**, and Karrie Karahalios. Tired of Bad Recommendations? A Design to Better Steer Your Feeds Inspired by Version Control. In *2021 Human Computer Interaction Consortium (HCIC) Virtual workshop*.
- [o.4] Tiffany Wenting Li\*, Silas Hsu\*, **Zhilin Zhang**, Craig Zilles, and Karrie Karahalios. Exploring Students' Control over Imperfect AI Autograders. In *2021 Human Computer Interaction Consortium (HCIC) Virtual workshop*.
- [o.3] Kendra Walther, Hongye Liu, Lawrence Angrave, Erin Carrier, **Zhilin Zhang**, Harsh Deep. Understanding the Needs of Students with Disabilities based on Universal Design for Learning Principles. In *2021 CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference*.
- [o.2] Hongye Liu, Jennifer Amos, Kusum Vanwani, **Zhilin Zhang**, Lawrence Angrave. Qualitative analysis of college students' perception of multiple representations and modalities in courses. In *2021 ASEE Illinois-Indiana Section Conference Proceedings*.
- [o.1] **Zhilin Zhang**, Lawrence Angrave. 2020. ClassTranscribe: Addressing the COVID Challenge and Promoting Better Equity in Education. In *Computing Research Association (CRA) Virtual Conference 2020*.