Tianyi Li

Curriculum Vitae

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Research Interests

I design and develop systems for **computer-supported cooperative work**, specifically, **crowdsourced sensemaking**, to scaffold **collective intelligence** of novice crowds for tasks such as **intelligence analysis**. I also conduct research and devise **visual analytics** tools with **user-centered design** to combine and coordinate **human and artificial intelligence** in broader, real-world **sensemaking** processes such as **data security** and **machine learning**. Throughout my work, I investigate and evaluate the UX impact of different **human-AI interaction** patterns.

Education

2015-2020 **Ph.D.**, *Computer Science*, Virginia Tech.
Dissertation: *Supporting Crowdsourced Sensemaking with a Modularized Pipeline and Context Slices*
Advisors: Dr. Chris North, Dr. Kurt Luther
Committee: Dr. Chris North (co-chair), Dr. Kurt Luther (co-chair), Dr. Gang Wang, Dr. Andrea Kavanaugh, Dr. Gregorio Convertino
Funded by NSF under grants IIS-1527453, IIS-1651969, and IIS-1447416

2011-2015 **Bachelor of Engineering**, *Computer Science*, The University of Hong Kong.
Final year project: *Evaluation of optimization algorithms for walking controller synthesis*
Advisor: Dr. Jack Wang
Division One

2014 **Exchange Student**, *Computer Science & Engineering*, University of California, San Diego.
Provost Honors

2011 **Foundation Year**, *Mechanical Engineering*, Shanghai Jiaotong University.

Professional Experience

2020-present **Loyola University Chicago**, Chicago, IL
Assistant Professor, Department of Computer Science

2019 **Microsoft Research**, Redmond, WA
Research Intern
Hosts: Dr. Mihaela Vorvoreanu, Dr. Saleema Amershi
Evaluated the UX impact of the guidelines for human-AI interaction with fictional scenarios and quantitative data analysis.

2018 **Cloudera**, Palo Alto, CA
Research Intern
Host: Dr. Gregorio Convertino
Developed a visual analytics tool for experiment tracking to support hyper-parameter tuning with user-centered design.

2017 **Informatica**, Redwood City, CA
Research Intern

Host: Dr. Gregorio Convertino

Developed an interactive recommender system to support decision-making and impact analysis for data-centric security with user-centered design.

2015-2020 **Virginia Tech**, Blacksburg, VA

Graduate Research Assistant | Graduate Teaching Assistant

2014 **Institute of Automation, Chinese Academy of Sciences**, Beijing, China

Research Intern

Host: Dr. Chengqing Zong

Worked on automatic extracting Chinese-English translation pairs from web pages.

Publications

Peer-Reviewed Conference and Journal Papers

2020 **Tianyi Li**, Yasmine Belghith, Chris North, Kurt Luther. CrowdTrace: Visualizing Provenance in Distributed Sensemaking. *To appear in IEEE Transactions on Visualization and Computer Graphics. (59/164 = 36% acceptance rate)*

2019 **Tianyi Li**, Chandler J. Manns, Chris North, and Kurt Luther. Dropping the Baton? Understanding Errors and Bottlenecks in a Crowdsourced Sensemaking Pipeline. *Proceedings of the ACM on Human-Computer Interaction,* ***CSCW****. Article 136 (November 2019), 26 pages. (205/658 = 31.2% acceptance rate)*

2019 **Tianyi Li**, Gregorio Convertino, Ranjeet Kumar Tayi, and Shima Kazerooni. What data should I protect?: recommender and planning support for data security analysts. *Proceedings of the 24th International Conference on Intelligent User Interfaces (****IUI '19****). ACM, New York, NY, USA, 286-297 (70/282=25% acceptance rate)*

2018 **Tianyi Li**, Kurt Luther, and Chris North. CrowdIA: Solving Mysteries with Crowdsourced Sensemaking. *Proceedings of the ACM on Human-Computer Interaction,* ***CSCW****. Article 105 (November 2018), 29 pages. (185/722=25.6% acceptance rate)*

Doctoral Symposium

2019 **Tianyi Li**. Solving Mysteries with the Wisdom of Crowds: a Modularized Pipeline and Context Slices. 2019. *Proceedings of the ACM on Human-Computer Interaction,* ***CSCW****.*

Workshop Papers and Demos

2019 **Tianyi Li**, Gregorio Convertino, Ranjeet Kumar Tayi, Shima Kazerooni, and Gary Patterson. Adding intelligence to a data security analysis system: recommendation and planning support. *Proceedings of the 24th International Conference on Intelligent User Interfaces: Companion (****IUI '19****). ACM, New York, NY, USA, 69-70.*

2018 **Tianyi Li**, Asmita Shah, Kurt Luther, and Chris North. Crowdsourcing Intelligence Analysis with Context Slices. ***CHI*** *Workshop on Sensemaking in a Senseless World, Montreal, Canada, 2018. (21% acceptance rate for full presentations)*

2018 **Tianyi Li**, Gregorio Convertino, Wenbo Wang, Haley Most, Tristan Zajonc and Yi-Hsun Tsai. HyperTuner: Visual Analytics for Hyperparameter Tuning by Professionals. ***IEEEVIS*** *Workshop on Machine Learning from User Interaction for Visualization and Analytics, Berlin, Germany.*

Patents

2020 US Patent 16/138684: Hyperparameter tuning using visual analytics in a data science platform

2019 US Patent 15/948310: Method, apparatus, and computer-readable medium for data protection simulation and optimization in a computer network.

Teaching Experience

Loyola University Chicago

Fall 2020 **Discrete Structures** (COMP 163, Undergraduate Class)

Guest Lectures

Fall 2019 **Social Computing & CSCW** (CS 5734, Graduate Class)
with *Dr. Sang Won Lee*

Fall 2019 **Introductory Data Analytics and Visualization** (CS 3654, Undergraduate Class)
with *Dr. Chris North*

Graduate Teaching Assistant at Virginia Tech

*Note: * indicates guest lecturing besides student project coaching, office hours and grading*

Spring 2020 **Machine Learning** (CS 4824, Undergraduate Class)
with *Dr. Anuj Karpatne*

Fall 2019 **Models and Theories of HCI** (CS 5724, Graduate Class)
with *Prof. Steve Harrison*

Fall 2019 **Design Of Information*** (CS 4634, Undergraduate Class)
with *Prof. Steve Harrison*

Fall 2018 **Introduction to GUI Programming and Graphics** (CS 3744, Undergraduate Class)
with *Dr. Kurt Luther*

Fall 2015 **Introduction to Programming in C** (CS 1044, Undergraduate Class)
with *Dr. Shvetha Soundararajan*

Student Mentoring

Master's **Yasmine Belghith** (CS, Virginia Tech, 2019 Fall)
Working on the refining path of the crowdsourced sensemaking pipeline (CrowdIA).

Undergraduate **Chandler J. Manns** (CS, Virginia Tech, 2018-2019)
Poster presentation at VTURCS symposium. Co-authored full paper in CSCW 2019.
Asmita Shah (CS, Virginia Tech, 2017-2018)
Poster presentation at VTURCS symposium. Co-authored workshop paper in CHI 2018.
Ria Sarkar (CS, Virginia Tech, 2016 Fall)
Assisted with data analysis.
Chris Lai (CS, Virginia Tech, 2016 Spring)
Assisted with Connect the Dots system back-end development and debugging.
Edward McEnrue (CS, Virginia Tech, 2015 Fall)
Assisted with Connect the Dots system front-end development and debugging.
Jazmine Zurita (CS, Virginia Tech, 2015 Fall)
Assisted with Connect the Dots system user interface design.

Awards and Honors

2019 Pratt Fellowship, Virginia Tech - $1000
2019 CSCW 2019 Student Volunteer Travel Fund - $800 (approx.)
2019 CSCW 2019 Doctoral Consortium Travel Fund - $1500 (approx.)
2019 IUI 2019 ACM SIGAI Student Travel Award - $800
2018-2019 Graduate Student Assembly (GSA) Travel Award, Virginia Tech - $800
2018-2019 Center for Human-Computer Interaction (CHCI) Travel Award, Virginia Tech - $1200
2018-2019 Computer Science Department Travel Award, Virginia Tech - $1800
2017 CRA-W Grad Cohort Travel Fund - $1000 (approx.)
2013 ACM programming contest (Hong Kong Regional) 3rd Place (Group)
2013-2014 C.V. Starr Scholarships (University of Hong Kong)

Professional Activities

2021 Poster & Demo Co-Chair for ACM IUI 2021
2020 Program Committee for the 14th ACM Recommender Systems Conference (RecSys 2020)
2020 Poster & Demo Co-Chair for ACM IUI 2020
2019 Student Volunteer at CSCW 2019
2019 Program Committee for the 13th ACM Recommender Systems Conference (RecSys 2019)
2019 Student Volunteer at IUI 2019
2019 Invited talk at NCWIT Aspirations in Computing (AiC)
2019 Associate Chair on the Program Committee for the ACM CHI Conference on Human Factors in Computing Systems (CHI) 2019 Late Breaking Work (LBW)
2019 Poster presentation *Algorithms That Make You Think, Fourth Annual Virginia Tech Workshop on the Future of Human-Computer Interaction*
2018 Poster presentation *Designing Socio-Technical Systems of Truth, Third Annual Virginia Tech Workshop on the Future of Human-Computer Interaction*
2017 Poster presentation at CRA-W Grad Cohort Workshop 2017 (Washington, DC)
2016-2018 Demo and poster presentation at ICAT (Institute for Creativity, Arts, and Technology) Day
2016-2018 Poster presentation and lab tours at graduate recruiting weeks at Virginia Tech
2013-2015 Volunteer lecturer of Koding Kingdom (Hong Kong)
2013 Research Assistant at HKU Li Ka Shing Faculty of Medicine
Reviewer CSCW 2020 Papers
RecSys 2020 Papers
CHI 2019 Late Breaking Work
CHI 2019 Papers
CSCW 2019 Papers
Creativity & Cognition 2019 Papers
RecSys 2019 Papers
VIS 2019 Papers
IUI 2019 Posters & Demos
CHI 2018 Late Breaking Work
CSCW 2018 Second Cycle

RecSys 2018 Papers

VIS 2018 Machine Learning from User Interaction for Visualization and Analytics Papers