Tianyi Li

Curriculum Vitae

Loyola University Chicago
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Appointment

2020.8- **Loyola University Chicago**, Chicago, IL
Assistant Professor, Department of Computer Science

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** principles.

Education

2015-2020 **Ph.D.**, *Computer Science*, **Virginia Tech**.
Dissertation: Supporting Crowdsourced Sensemaking with a Modularized Pipeline and Context Slices
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 **B.Eng.** (Division One Honor), *Computer Science*, **The University of Hong Kong**.
Final year project: *Evaluation of Optimization Algorithms for Walking Controller Synthesis*
Advisor: Dr. Jack Wang

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

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

Professional Experience

2019.6-2019.8 **Microsoft Research**, Redmond, WA
Research Intern
Hosts: Dr. Mihaela Vorvoreanu, Dr. Saleema Amershi

Designed and led a series of factorial survey studies to evaluate guidelines for human-AI interaction. Developed a customized web application to collect data on MTurk; conducted mixed-method result analysis on the guidelines' impact on end-user experience; outlined implications for guideline application and evaluation methods.

2018.5-2018.8 **Cloudera**, Palo Alto, CA
Research Intern
Host: Dr. Gregorio Convertino

Led user-centered design to support model agnostic hyper-parameter tuning. Conducted semi-structured interviews to elicit user needs, characterize personas, and formalize the hyperparameter tuning process as a workflow. Implemented a visual analytics tool via iterative design and development cycles.

2017.5-2017.8 **Informatica**, Redwood City, CA
Research Intern

Host: Dr. Gregorio Convertino

Led user-centered design to support decision-making and impact analysis for data-centric security. Conducted design workshops to classify and visualize user requirements with wireframing. Implemented an interactive recommender interface that was later included in the product release.

2015.8-2020.5 **Virginia Tech**, Blacksburg, VA

Graduate Research Assistant | Graduate Teaching Assistant

2014.6-2014.8 **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

Under review **Tianyi Li**, Mihaela Vorvoreanu, Derek DeBellis, Saleema Amershi. Assessing the UX Impact of Human-AI Interaction Guidelines. *Under review in ACM CHI Conference on Human Factors in Computing Systems*

[C.4] **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)*

[C.3] **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)*

[C.2] **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)*

[C.1] **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)*

Workshop Papers and Demos

[W.4] **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**.*

[W.3] **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.*

[W.2] **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)*

[W.1] **Tianyi Li**, Gregorio Convertino, Wenbo Wang, Haley Most, Tristan Zajonc and Yi-Hsun Tsai. Hyper-Tuner: Visual Analytics for Hyperparameter Tuning by Professionals. ***IEEEVIS** Workshop on Machine Learning from User Interaction for Visualization and Analytics, Berlin, Germany.*

Patents

[P.2] US Patent 16/138684: Hyperparameter tuning using visual analytics in a data science platform

[P.1] 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

Spring 2021 Introduction to Computing Tools and Techniques *(COMP 141, Undergraduate Class, remote)*

Discrete Structures *(COMP 163, Undergraduate Class, remote)*

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

Guest Lectures at Virginia Tech

Fall 2019 Social Computing & CSCW *(CS 5734, Graduate Class)*

Fall 2019 Introductory Data Analytics and Visualization *(CS 3654, Undergraduate Class)*

Graduate Teaching Assistant at Virginia Tech (Lecturing, project coaching, office hours and grading)

Spring 2020 Machine Learning *(CS 4824, Undergraduate Class)*

Fall 2019 Models and Theories of HCI *(CS 5724, Graduate Class)*

Fall 2019 Design Of Information *(CS 4634, Undergraduate Class)*

Fall 2018 Introduction to GUI Programming and Graphics *(CS 3744, Undergraduate Class)*

Fall 2015 Introduction to Programming in C *(CS 1044, Undergraduate Class)*

Student Mentoring

2019-2020 Yasmine Belghith (Master's, CS, Virginia Tech)

Co-authored short paper at IEEE VIS 2020 (CrowdTrace).

2018-2019 Chandler J. Manns (Undergraduate, CS, Virginia Tech)

Poster presentation at VTURCS symposium. Co-authored full paper in CSCW 2019.

2017-2018 Asmita Shah (Undergraduate, CS, Virginia Tech, 2017-2018)

Poster presentation at VTURCS symposium. Co-authored workshop paper in CHI 2018.

2016 Fall Ria Sarkar (Undergraduate, CS, Virginia Tech)

Assisted with data analysis.

2016 Spring Chris Lai (Undergraduate, CS, Virginia Tech)

Assisted with Connect the Dots system back-end development and debugging.

2015 Fall Edward McEnrue (Undergraduate, CS, Virginia Tech)

Assisted with Connect the Dots system front-end development and debugging.

2015 Fall Jazmine Zurita (Undergraduate, CS, Virginia Tech)

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 2021 Papers
	CHI 2021 Papers
	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