Tianyi Li

Curriculum Vitae

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Appointment

Aug 2021 – **Purdue University**, West Lafayette, IN
Assistant Professor, Department of Computer Information Technology

2020 – 2021 **Loyola University Chicago**, Chicago, IL
Assistant Professor, Department of Computer Science

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

Jun-Aug 2019 **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.

May-Aug 2018 **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.

May-Aug 2017 **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.

2015-2020 **Virginia Tech**, Blacksburg, VA
Graduate Research Assistant | Graduate Teaching Assistant

Jun-Aug 2014 **Institute of Automation, Chinese Academy of Sciences**, Beijing, China

Undergraduate Research Intern | *Host: Dr. Chengqing Zong*

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

Publications

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*

[J.2] Maoyuan Sun, Akhil Namburi, David Koop, Jian Zhao, **Tianyi Li**, Haeyong Chung. Towards Systematic Design Considerations for Visualizing Cross-View Data Relationships. *IEEE Transactions on Visualization and Computer Graphics, **IEEE TVCG 2021** (2021/8/6)*

[J.1] Andrew Anderson, Rupika Dikkala, **Tianyi Li**, Mihaela Vorvoreanu, Margaret Burnett. Understanding Diversity in Human-AI Data: What Cognitive Style Disaggregation Reveals. *arXiv preprint arXiv:2108.00588*

[C.4] **Tianyi Li**, Yasmine Belghith, Chris North, Kurt Luther. CrowdTrace: Visualizing Provenance in Distributed Sensemaking. *In 31st IEEE Visualization Conference, **IEEE VIS** 2020 - Short Papers. (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. HyperTuner: Visual Analytics for Hyperparameter Tuning by Professionals. ***IEEE VIS** 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

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

Instructor *Spring 2021 (30 students), Fall 2020 (two sections, 26 and 24 students)*

Key topics: set theory, proofs, first-order logic, binary relations, function, number theory, counting method, graph theory, induction, finite automata, formal language, regular expression

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

Instructor *Spring 2021 (33 students)*

Key topics: Unix (Linux) environment, filesystem, processes, the shell environment, basic systems administration, networking tools, file formats, regular expressions, text processing tools, toolchains (i.e. compiling programs), essential version control, writing shell scripts, etc.

Virginia Tech

CS 5734 **Social Computing & CSCW** *(Graduate Class)*

Fall 2019, Guest Lecture

Key topics: design, implementation, use, and analysis of computing systems concerned with multiple users and stakeholders.

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

Fall 2019, Graduate Teaching Assistant (lecturing, project coaching, office hours and grading)

Key topics: classical human-factors, classical cognitivism/information processing, a phenomenologically-situated paradigm

CS 4824 **Machine Learning** *(Undergraduate Class)*

Spring 2020, Graduate Teaching Assistant (project coaching, office hours and grading)

Key topics: classification basics, decision trees, naive bayes, bayesian networks, and knn, logistic regression, artificial neural networks, support vector machines, ensemble learning, class imbalance, dimensionality reduction, clustering, anomaly detection, generative modeling

CS 4634 **Design Of Information** *(Undergraduate Class)*

Fall 2019, Graduate Teaching Assistant (lecturing, project coaching, office hours and grading)

Key topics: design-centered approach, audience-driven design, develop requirements through information architecture principles and methods, systems of systems.

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

Fall 2018, Graduate Teaching Assistant (project coaching, office hours and grading)

Key topics: HCI design, HCI evaluation, web standards, HTML, CSS, frameworks, responsive design, JavaScript, DOM, event handling, jQuery, Model-view-controller, Apache, PHP, sessions, cookies, Ajax, XML, JSON, MySQL / MariaDB, Crowdsourcing, activity feeds, user analytics, visualization, D3.js

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

Fall 2019, Guest Lecture

Key topics: basic principles and techniques in data analytics; methods for the collection of, storing, accessing, and manipulating standard-size and large datasets; data visualization; and identifying sources of bias.

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

Fall 2015, Graduate Teaching Assistant (project coaching, office hours and grading)

Key topics: structured data, statement sequencing, logic control, input/output, and functions.

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	TVCG 2021
	CSCW 2021, 2020, 2019, 2018
	CHI 2021, 2019, 2018
	RecSys 2020, 2019, 2018
	Creativity & Cognition 2019
	IUI 2019
	VIS 2019, 2018

References

Dr. Chris North

Title	Professor
Affiliation	Department of Computer Science, Virginia Tech
Address	3160D Torgersen Hall, Blacksburg, VA 24061-0106
Email	north@vt.edu
Phone	(540) 231-2458
Relationship	*Dr. North is my Ph.D. advisor*

Dr. Kurt Luther

Title	Associate Professor
Affiliation	Department of Computer Science, Virginia Tech Research Center-Arlington
Address	900 N Glebe Rd, Arlington, VA 22203
Email	kluther@vt.edu
Phone	(571) 858-3335
Relationship	*Dr. Luther is my Ph.D. advisor*

Dr. Mihaela Vorvoreanu

Title	Senior Program Manager/UX Researcher
Affiliation	Microsoft Research
Address	14820 NE 36th St, Redmond, WA 98052
Email	mivorvor@microsoft.com
Relationship	*Dr. Vorvoreanu is the mentor of my research internship at MSR*