

Lane Harrison

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Professional Appointments

- 2015–Present **Assistant Professor**, *Department of Computer Science*, Worcester Polytechnic Institute.
- 2015 **Adjunct Teaching Professor**, *Department of Computer Science*, Worcester Polytechnic Institute.
- 2014–2015 **Instructor**, *Department of Computer Science*, Tufts University.
- 2013–2015 **Postdoctoral Researcher**, *Visual Analytics Lab*, Tufts University.
- 2012–2013 **Visiting Researcher**, *Situational Awareness and Visual Analytics Group*, Oak Ridge National Lab.
- 2011–2013 **Visiting Ph.D. Student**, Tufts University.

Academic Degrees

- 2009–2013 **Ph.D. Computer Science**, *UNC-Charlotte*.
Dissertation: The Role of Emotion in Visualization
- 2005–2009 **B.S. Computer Science**, *UNC-Charlotte*.
Minor: Mathematics

Awards and Honors

- Best Paper: CHI 2016 (top 1%).
- Honorable Mention: BioVis 2015 Design Contest Challenge 2, 2015.
- Data Analysis and Visual Analytics Ph.D. Fellowship, Department of Homeland Security, 2009–2012.
- Best Poster Award: IEEE VAST Conference, 2012.
- IEEE VAST Challenge Award, 2011.
- UNC-Charlotte Graduate Life Fellow, 2011.
- UNC-Charlotte Chancellor's Diversity Fund Grant, 2009.
- VizSec Travel Scholarship, 2010.
- Invitation to CSTA/SIGCSE K12 Outreach Workshop for Colleges and Universities, 2008.
- Invitation to NSF STARS Alliance Workshop on Pair Programming and Mentoring, 2008.
- STARS Symposium Leadership Award, High School Outreach in Charlotte, NC, 2007.

Teaching

Year	Course
Spring 2017	BCB4002/CS5802/BCB502/CS582/CS573 BioVisualization
Fall 2016	CS4241 WebWare
Fall 2016	CS573 Data Visualization
Spring 2015	BCB4002/CS5802/BCB502/CS582 BioVisualization
Fall 2015	CS4241 WebWare
Fall 2015	CS573 Data Visualization

Undergraduate Project Advising – MQP

- 2016–2017 **Andrew Mokotoff, Zachary Robbins, Barrett Wolfson (CS)**, "*Visualizing Contextual Information for Network Vulnerability Management*".
- 2016–2017 **Clark Jacobsohn, Will Hartman (CS)**, "*EyeSite: A Framework for Browser-Based Eye Tracking Studies*".
- 2016–2017 **Devon Coleman, Chris Navarro, Jean-Marc Touma (CS)**, "*Safety or Security: What Notifications do we Notice?*", Co-advisor with Krishna Venkatasubramian (CS).
- 2016–2017 **Heric Flores-Huerta (CS), Jacob Link (CS), Cassidy Litch (Math/CS)**, "*Cyber Security Network Anomaly Detection and Visualization*", Co-advisor with Randy Paffenroth (Math).
- 2016–2017 **Rosemary Lindsay (IMGD, ECE), Kyle Stack (IMGD) Alex Hebert (IMGD), Chandler Reynolds (IMGD)**, "*Lock_Out: A Cybersecurity MQP and Game*", Co-advisor with Lee Sheldon (IMGD).
- 2015–2016 **Sam Mailand (CS)**, "*Freedom Trail Tour Guide App*", Co-advisor with Wilson Wong (CS).

Independent Studies

- Spring 2017 **Cheng Deng (DS)**.
- Spring 2017 **Will Hartman (CS)**.
- Spring 2017 **Himanshu Sanjay (CS)**.
- Spring 2017 **Austin Rose (CS)**.
- Spring 2017 **Shi Wang (DS)**.
- Fall 2016 **Cheng Deng (DS)**.
- Fall 2016 **Shaowei Gong (DS)**.
- Spring 2016 **John Bosworth (CS)**.
- Spring 2016 **Ivan Melnikov (CS)**.
- Fall 2015 **Shawn Yoon (CS)**.
- Fall 2015 **Alyssa Tsiros (BCB)**.

Graduate Advising

PhD Students

- 2016–Present **Mi Feng (CS)**, *Next Milestone: Proposal Fall '17*.
- 2016–Present **Hamid Mansoor (CS)**, *Next Milestone: Qualifier Fall/Spring '17*.

MS Students

none.

Doctoral Committees

- 2016 **Andi Dhroso, WPI**, Advisor: Dmitry Korkin.

MS Thesis Committees

- 2016 **Natasha Danas, WPI**, Advisor: Dan Dougherty.

Research Qualifier Committees

- 2017 **Tabassum Kakar, WPI**, Advisor: Elke Rundensteiner.

Research Experience Advising

- Summer 2017 **Joyce Fang, Algonquin High School, BCB Summer Research Experience**.

Summer 2017 **Ohemaa Prempeh, Worcester Technical High School, BCB Summer Research Experience.**
 Summer 2017 **Cole Polychronis, Westminster College, Data Science REU.**
 Summer 2017 **Apoorva Nori, New York University, Data Science REU.**
 Summer 2016 **Allan La, Bucknell University, Data Science REU.**
 Summer 2016 **Rebekah Eversole, Bowling Green State University, Data Science REU.**
 Summer 2016 **Kartik Thoopall Vasu, WPI, WPI Summer Undergraduate Research Fellowship (SURF).**

Publications

Note: entries in **Orange** are graduate students at WPI; entries in **Purple** are undergraduate students at WPI.

Journal

- [1] **Natasha Danas**, Tim Nelson, Lane Harrison, Shriram Krishnamurthi, and Dan Dougherty. User Studies of Principled Model Finder Output. *Software Engineering and Formal Methods (SEFM)*, 2017.
- [2] Li Yu, Lane Harrison, and Aidong Lu. Effectiveness of feature-driven storytelling in 3d time-varying data visualization. *Journal of Imaging Science and Technology*, 60(6):60408–1, 2016.
- [3] **Mi Feng**, **Cheng Deng**, Evan M. Peck, and Lane Harrison. HindSight: Encouraging Exploration through Direct Encoding of Personal Interaction History. *IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis) (Acceptance Rate 22.15%)*, 2016.
- [4] Anzu Hakone, Lane Harrison, Alvitta Ottley, Nathan Winters, Caitlin Guthiel, Paul K. J. Han, and Remco Chang. PROACT: Iterative Design of a Patient-Centered Visualization for Effective Prostate Cancer Health Risk Communication. *IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis) (Acceptance Rate 22.15%)*, 2016.
- [5] Alvitta Ottley, Evan M. Peck, Lane Harrison, Daniel Afergan, Caroline Ziemkiewicz, Holly A. Taylor, Paul K. J. Han, and Remco Chang. Improving Bayesian Reasoning: The Effects of Phrasing, Visualization, and Spatial Ability. *IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis) (Acceptance Rate 21.34%)*, 2015.
- [6] Drew Skau, Lane Harrison, and Robert Kosara. An Evaluation of The Impact of Visual Embellishments In Bar Charts. In *Computer Graphics Forum (Proc. EuroVis) (Acceptance Rate 32%)*, 2015.
- [7] Lane Harrison, Fumeng Yang, Steven Franconeri, and Remco Chang. Ranking Visualizations of Correlation Using Weber’s Law. *IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis) (Acceptance Rate 22.96%)*, 2014.
- [8] Lane Harrison and Aidong Lu. The Future of Security Visualization: Lessons from Network Visualization. *Network, IEEE*, 26(6):6–11, 2012.
- [9] Wenwen Dou, Caroline Ziemkiewicz, Lane Harrison, Dong Hyun Jeong, William Ribarsky, Xiaoyu Wang, and Remco Chang. Toward a Deeper Understanding of the Relationship between Interaction Constraints and Visual Isomorphs. *Information Visualization*, 2012.
- [10] Li Yu, Lane Harrison, Aidong Lu, Zhiwei Li, and Weichao Wang. 3D Digital Legos for Teaching Security Protocols. *Learning Technologies, IEEE Transactions on*, 4(2):125–137, 2011.

Refereed Conference

- [11] Beste F Yuksel, Kurt Oleson, Lane Harrison, Evan M Peck, Daniel Afergan, Remco Chang, and Robert JK Jacob. **Best Paper Award (Top 1%)** Learn Piano with BACH: An Adaptive Learning Interface that Adjusts Task Difficulty based on Brain State. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (Acceptance Rate 23%)*, 2016.
- [12] Beste F Yuksel, Daniel Afergan, Evan M Peck, Garth Griffin, Lane Harrison, Nick WB Chen, Remco Chang, and Robert JK Jacob. Braahms: A novel adaptive musical interface based on users' cognitive state. In *New Interfaces for Musical Expression (NIME) (Acceptance Rate 20.6%)*, 2015.
- [13] Lane Harrison, Katharina Reinecke, and Remco Chang. Infographic aesthetics: Designing for the first impression. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (Acceptance Rate 23%)*, 2015.
- [14] Diane Staheli, Tamara Yu, Jordan Crouser, Suresh Damodaran, Kevin Nam, David O'Gwynn, Sean McKenna, and Lane Harrison. Visualization evaluation for cyber security: Trends and future directions. *Proceedings of the Eleventh International Symposium on Visualization for Cyber Security (VizSec) (Acceptance Rate 28%)*, 2014.
- [15] Lane Harrison, Drew Skau, Steven Franconeri, Aidong Lu, and Remco Chang. Influencing visual judgment through affective priming. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (Acceptance Rate 20%)*, 2013.
- [16] Lane Harrison, Riley Spahn, Mike Iannacone, Evan Downing, and John R Goodall. Nv: Nessus vulnerability visualization for the web. In *Proceedings of the Ninth International Symposium on Visualization for Cyber Security (Acceptance Rate 57%)*. ACM, 2012.
- [17] Wenwen Dou, Caroline Ziemkiewicz, Lane Harrison, Dong Hyun Jeong, Roxanne Ryan, William Ribarsky, Xiaoyu Wang, and Remco Chang. Comparing different levels of interaction constraints for deriving visual problem isomorphs. In *Visual Analytics Science and Technology (VAST), 2010 IEEE Symposium on (Acceptance Rate 28%)*, 2010.
- [18] Lane Harrison, Xianlin Hu, Xiaowei Ying, Aidong Lu, Weichao Wang, and Xintao Wu. Interactive detection of network anomalies via coordinated multiple views. In *Proceedings of the Seventh International Symposium on Visualization for Cyber Security (Acceptance Rate 44%)*, 2010.

Refereed Workshops

- [19] Jordan Sechler, Lane Harrison, and Evan M. Peck. Sightline: Building on the web's visualization ecosystem. *ACM SIGCHI Late Breaking Work*, 2017.
- [20] Jordan R Crouser, Lane Harrison, Daniel Afergan, and Evan M. Peck. Beyond detection: Investing in practical and theoretical applications of emotion and visualization. *IUI: ACM Conference on Intelligent User Interfaces, Workshop on Emotion and Visualization*, 2016.
- [21] Alvitta Ottley, Evan M Peck, Lane Harrison, and Remco Chang. The adaptive user: Priming to improve interaction. *ACM CHI 2013 Workshop on Many People Many Eyes*, 2013.
- [22] Evan M Peck, Beste F Yuksel, Lane Harrison, Alvitta Ottley, and Remco Chang. ICD³: Towards a 3-dimensional model of individual cognitive differences. *IEEE VisWeek BELIV Workshop (Beyond time and errors: novel evaluation methods for information visualization)*, 2012.

- [23] Lane Harrison, Thomas Butkiewicz, Xiaoyu Wang, William Ribarsky, and Remco Chang. A linked feature space approach to exploring lidar data. In *SPIE Defense, Security, and Sensing*, 2010.

Posters / Other Publications

- [24] Jared Chandler, Remco Chang, and Lane Harrison. Dirviz: Interactively scale treemaps for file permission visualization. In *Poster: IEEE Symposium on Visualization for Cyber Security*, 2016.
- [25] Eun Youb Lee, Beste F Yuksel, Daniel Afergan, Samuel W Hincks, Tomoki Shibata, Erin Solovey, AJ Jenkins, Kurt B Oleson, Lane Harrison, Evan M Peck, Remco Chang, and Robert JK Jacob. Using brain states to enhance user experience. In *SICASE: Seoul International Conference on Applied Science and Engineering*, 2016.
- [26] Lane Harrison and Aidong Lu. Incorporating uncertainty in intrusion detection to enhance decision making. In *Scientific Visualization*, pages 71–78. Springer, 2014.
- [27] Lane Harrison, Jason Laska, Riley Spahn, Mike Iannacone, Evan Downing, Erik M Ferragut, and John R Goodall. situ: Situational understanding and discovery for cyber attacks. In *Visual Analytics Science and Technology (VAST), 2012 IEEE Conference on*, pages 307–308. IEEE, 2012.
- [28] Xianlin Hu, Lane Harrison, Aidong Lu, Li Yu, Huaguang Song, and Jinzhu Gao. Evaluation of co-located and distributed collaborative visualization. In *Proceedings of the 5th International Symposium on Visual Information Communication and Interaction*, pages 95–103. ACM, 2012.
- [29] Lane Harrison, Remco Chang, and Aidong Lu. **Best Poster**: Exploring the Impact of Emotion on Visual Judgement. In *Visual Analytics Science and Technology (VAST), 2012 IEEE Conference on*, pages 227–228. IEEE, 2012.
- [30] Xianlin Hu, Huaguang Song, Lane Harrison, Aidong Lu, Jinzhu Gao, and Weichao Wang. Towards effective collaborative analysis for distributed intrusion detection. In *The 6th IASTED International Conference on Human-Computer Interaction*, 2011.
- [31] Lane Harrison, Wenwen Dou, Aidong Lu, William Ribarsky, and Xiaoyu Wang. Poster: Analysts aren’t machines: Inferring frustration through visualization interaction. In *Visual Analytics Science and Technology (VAST), 2011 IEEE Conference on*, pages 279–280. IEEE, 2011.
- [32] Lane Harrison, Wenwen Dou, Aidong Lu, William Ribarsky, and Xiaoyu Wang. Poster: Guiding Security Analysis through Visualization. **Award: High Potential for Scalability**. In *IEEE VAST*, pages 317–318, 2011.
- [33] Samantha L Finkelstein, Andrea Nickel, Lane Harrison, Evan A Suma, and Tiffany Barnes. Poster: cMotion: A new game design to teach emotion recognition and programming logic to children using virtual humans. In *Virtual Reality Conference, 2009. VR 2009. IEEE*, pages 249–250. IEEE, 2009.

Outreach

2013-2014 **Organizer: BostonCHI Labs Research Consortium.**

Service

Organization

- IEEE VIS Organizing Committee: 2017
- IEEE InfoVis Program Committee: 2017
- IEEE EuroVis Program Committee: 2017
- OpenVisConf Program Committee: 2017
- IEEE Symposium on Visualization for Cyber Security (VizSec), Sponsorship/Publicity Chair: 2016
- VizSec, General Chair: 2015
- National Science Foundation, Panel Reviewer: 2017
- National Science Foundation, Panel Reviewer: 2016
- National Science Foundation, Panel Reviewer: 2015
- VizSec, Publications Chair: 2014
- EuroVis Short Papers Program Committee: 2016
- EuroVis Workshop on Visual Analytics (EuroVA) Program Committee: 2015-2016
- ACM Creativity and Cognition (C&C) Program Committee: 2015
- ACHI Program Committee: 2014
- VizSec Program Committee: 2013

Reviewing

- APA Journal of Experimental Psychology: Applied, 2016
- ACM Special Interest Group on Computer Human Interaction (SIGCHI), 2014-2016
- ACM Transactions on Computer Human Interaction (TOCHI), 2015
- IEEE Transactions on Visualization and Computer Graphics (TVCG), 2015
- Graphics Interface (GI), 2015
- Human Computation Journal, 2015
- Information Security Journal, 2015
- ACM Transactions on Interactive Intelligent Systems (TiiS), 2014-2015
- IEEE Conference on Information Visualization (InfoVis), 2011-2016
- IEEE Conference on Visual Analytics Science and Technology (VAST), 2014-2016
- IEEE-VGTC Symposium on Visualization (Eurovis) – State of the Art Reports, 2016
- IEEE-VGTC Symposium on Visualization (Eurovis), 2014-2015
- IEEE Symposium on Visualization for Cyber Security (VizSec), 2012-2014
- IBM Journal of Research, 2012
- IEEE VIS Posters, 2011-2013

University

- Enterprise Resource Planning Selection Committee, 2016–2017
- IQP Presidents' Award Selection Committee, 2016
- Bioinformatics and Computational Biology Steering Committee, 2015–2016
- Data Science Steering Committee, 2015–2016
- Interactive Media and Game Development Steering Committee, 2015–2016
- CS Graduate Admissions Committee, 2015–2016

Invited Talks / Panels / Interviews

- Talks
 - *Human Centered Data Visualization*. Southern Connecticut State University, April 2017
 - *Quantitative Models for User-Centered Visualization Systems*. Pacific Northwest National Lab, April 2016
 - *Data Visualization: Trees and Networks*. Smith College, April 2016
 - *Re-Centering Human Centered Visualization*. Keene State University, March 2016
 - *Re-Centering Human Centered Visualization*. BostonCHI, IBM Cambridge, February 2016
 - *Quantitative Models for User-Centered Visualization Systems*. MIT Lincoln Labs, August 2015
 - *Quantitative Models for User-Centered Visualization Systems*. Harvard, May 2015
 - *Quantitative Models for User-Centered Visualization Systems*. SUNY Korea, April 2015
 - *Data Visualization*. Tufts Data Science Meetup, November 2014
 - *User-Centered Visualization*. Microsoft NERD – Boston DataVis Meetup, September 2014
 - *User-Centered Visualization*. Charles River Analytics. September 2014
 - *Hacking and Debugging the User in Visual Analytics*. MIT Systems Engineering Advanced Research Initiative (SEArI), August 2014
 - *Human-Computer Interaction and Visualization Research*. Ipswich Middle School Technology Initiative, June 2014
 - *Nessus Vulnerability Visualization and VizSec*. MIT Lincoln Labs, December 2013
 - *NV: Nessus Vulnerability Visualization for the Web*. Charlotte Visualization Center, October 2012
 - *Student Research in the Charlotte Visualization Center*. UNC-Charlotte, February 2012
 - *Interactive Detection of Network Anomalies via Coordinated Multiple Views*. Charlotte Visualization Center, March 2011
 - *Advice for new Ph.D. Students*. Introduction to Ph.D. Research, UNC-Charlotte, September 2011
 - *Philosophy of High School Outreach Revisited*. STARS Symposium, August 2009
 - *Philosophy of High School Outreach*. STARS Symposium, August 2008
- Panels
 - *Visual Analytics and Automatic Detection Methods*. VizSec Symposium, July 2011
 - *Broadening Participation: iCompute Image Campaign*. STARS Symposium, August 2008
 - *STARS Student Leadership*. Richard Tapia Conference for Diversity in Computing, October 2007
- Poster Presentations
 - *NV: Nessus Vulnerability Visualization and VizSec*. Cyber and Netcentric Workshop. MIT Lincoln Labs, June 2014
 - *What about Transfer Students? Audiences and Outreach Opportunities*. NSF STARS Alliance Celebration. USF Lakeland, August 2010
 - *UNC Charlotte High School Outreach: Impact, Evaluation, and Approach*. NSF STARS Alliance Celebration. Tallahassee, FL., August 2009
- Interviews/Press
 - *PolicyViz Podcast Episode #44*. John Schwabish, May 2016
 - *This Brain-Reading Tool Can Teach You A New Skill In No Time*. Fast Company, February 2016
 - *Mind-reading tech helps beginners quickly learn to play Bach*. New Scientist, February 2016
 - *The Persuasiveness of a Chart Depends on the Reader, Not Just the Chart*. Harvard Business Review, May 2015
 - *Don't Read Infographics When You're Feeling Anxious*. Harvard Business Review, May 2013

- *Image Crisis, Inspiring a New Generation of Computer Scientists*. Rick Rashid, Communications of the ACM (CACM), February 2008
- *STARS Students*. Computer Science Teachers Association (CSTA) CS Podcast, October 2007