# Remco Chang

## Professional Appointments

09/16 – current **Associate Professor**, *Tufts University*, Medford, MA.
Department of Computer Science
Adjunct Appointment in the Cognitive and Brain Science Program (2017–)

02/20 – current **Advisor & Co-Founder**, *Kyrix Inc*, Cambridge, MA.
Co-Founders: Mike Stonebraker, Wenbo Tao, Adam Sah, Ken Smith, Kathleen Huber, Ricardo Mayerhofer

12/17 – 1/18 **Visiting Faculty**, *Ghent University*, Ghent, Belgium.
hosts: Tijl De Bie, Jefrey Lijffijt

09/10 – 05/16 **Assistant Professor**, *Tufts University*, Medford, MA.
Department of Computer Science
Director of the Visual Analytics Lab at Tufts (VALT)

01/05 – 06/10 **Research Scientist**, *University of North Carolina Charlotte*, Charlotte, NC.

10/02 – 10/03 **Senior Software Engineer**, *Boeing Corp/Preston Aviation*, Fairfax, VA.

06/00 – 04/01 **Technology Lead**, *BountyQuest Corp*, Boston, MA.

## Academic Degrees

December 2009 **PhD in Computer Science**, *University of North Carolina Charlotte*, Charlotte, NC.
Thesis: "Thinking Interactively with Visualization"
Advisor: William Ribarsky

May 2000 **MSc in Computer Science**, *Brown University*, Providence, RI.
Thesis: "Simulation Techniques for Deformable Animated Characters"
Advisor: Nancy Pollard

December 1997 **BA in Computer Science**, *Johns Hopkins University*, Baltimore, MD.

December 1997 **BA in Economics**, *Johns Hopkins University*, Baltimore, MD.

## Consulting

07/15 – 06/16 *National Cancer Institute (via Maine Medical Center)*, Rockville, MD

05/10 – 05/11 *DARPA (via Lustick Consulting)*, Philadelphia, PA

03/10 – 05/11 *Bank of America*, Charlotte, NC

## Awards and Honors

2021 - Associate Editor: IEEE Transactions on Visualization and Computer Graphics
2020 - Sigma Xi Honor Society Full Member
2019– - Tufts University Faculty Senate (Committee on Research and Scholarship)
2019 - Conference Papers Chair: IEEE Visual Analytics Science and Technology (VAST)
2018 - Conference Papers Chair: IEEE Visual Analytics Science and Technology (VAST)
- Best Paper Award: Symposium on Visualization in Data Science
2017 - Best Paper Award: Workshop on Visual Analytics for Deep Learning
2016 - Best Paper Award: ACM SIGCHI Conference
2015 - Tufts CELT Fellow (Center for Enhancement of Learning and Teaching)
- NSF CAREER Award
- Honorable Mention Award: ACM SIGCHI Conference

- Best Paper Award: SPIE Visual Data Analysis (VDA)

2014
- IEEE VGTC PhD Dissertation Award Honorable Mention: Jordan Crouser
- Associate Editor: ACM Transactions on Interactive Intelligent Systems (2014-present)
- Honorable Mention Award: ACM SIGCHI Conference

2013
- Faculty Mentoring Award: Tufts University School of Engineering
- Special Mention for Outstanding Faculty Contribution to Graduate Studies: Tufts University

2012
- Best Poster Award: IEEE VAST Conference

2011
- Honorable Mention Award: IEEE VAST Conference
- Best Poster Award: IEEE InfoVis Conference
- Best Panel Award: IEEE VAST Conference
- Visualizing Research @ Tufts Award: First Place in Illustrations

2008
- Best Poster Award: IEEE VAST Conference

2007
- Runner-Up Best Paper Award: IEEE VAST Conference

## Publications

*Journal Publications*


[1] Fatemah Mukadum, Quan Nguyen, Daniel M Adrion, Gabriel Appleby, Rui Chen, Haley Dang, Remco Chang, Roman Garnett, and Steven A Lopez. Efficient discovery of visible light-activated azoarene photoswitches with long half-lives using active search. *Journal of Chemical Information and Modeling*, 61(11):5524–5534, 2021.

[2] Mateus Espadoto, Gabriel Appleby, Ashley Suh, Dylan Cashman, Mingwei Li, Carlos E Scheidegger, Erik Wesley Anderson, Remco Chang, and Alexandru Cristian Telea. Unprojection: Leveraging inverse-projections for visual analytics of high-dimensional data. *IEEE Transactions on Visualization and Computer Graphics*, 2021. To appear.

[3] Yifan Wu, Remco Chang, Joseph M Hellerstein, Arvind Satyanarayan, and Eugene Wu. Diel: Interactive visualization beyond the here and now. *IEEE transactions on visualization and computer graphics*, 28(1):737–746, 2021.

[4] Marianne Procopio, Ab Mosca, Carlos Scheidegger, Eugene Wu, and Remco Chang. Impact of cognitive biases on progressive visualization. *IEEE Transactions on Visualization and Computer Graphics*, 2021.

[5] Wenbo Tao, Xinli Hou, Adam Sah, Leilani Battle, Remco Chang, and Michael Stonebraker. Kyrix-S: Authoring scalable scatterplot visualizations of big data. *IEEE Transactions on Visualization and Computer Graphics*, 2020.

[6] Xi Chen, Wei Zeng, Yanna Lin, Hayder Mahdi Al-Maneea, Jonathan Roberts, and Remco Chang. Composition and configuration patterns in multiple-view visualizations. *IEEE Transactions on Visualization and Computer Graphics*, 2020.

[7] Dylan Cashman, Shenyu Xu, Subhajit Das, Florian Heimerl, Cong Liu, Shah Rukh Humayoun, Michael Gleicher, Alex Endert, and Remco Chang. CAVA: A visual analytics system for exploratory columnar data augmentation using knowledge graphs. *IEEE Transactions on Visualization and Computer Graphics*, 2020.

[8] N Boukhelifa, A Bezerianos, R Chang, C Collins, S Drucker, A Endert, J Hullman, C North, and M Sedlmair. Challenges in evaluating interactive visual machine learning systems. *IEEE Computer Graphics and Applications*, 40(6):88–96, 2020.

[9] Subhajit Das, Shenyu Xu, Michael Gleicher, Remco Chang, and Alex Endert. QUESTO: Interactive Construction of Objective Functions for Classification Tasks. *Computer Graphics Forum*, 39(3):153–165, 2020. Paper appeared in the EuroVis Conference.

[10] Kai Xu, Alvitta Ottley, Conny Walchshofer, Marc Streit, Remco Chang, and John Wenskovitch. Survey on the analysis of user interactions and visualization provenance. *Computer Graphics Forum*, 39(3), 2020. Paper appeared in the EuroVis Conference as a STAR (State of the Art Report).

[11] John Wenskovitch, Michelle Zhou, Christopher Collins, Remco Chang, Michelle Dowling, Alex Endert, and Kai Xu. Putting the "I" in interaction: Interactive interfaces personalized to individuals. *IEEE Computer Graphics and Applications*, 40(3):73–82, 2020.

[12] Dylan Cashman, Adam Perer, Remco Chang, and Hendrik Strobelt. Ablate, variate, and contemplate: Visual analytics for discovering neural architectures. *IEEE transactions on visualization and computer graphics*, 26(1):863–873, 2019. Paper appeared in the VAST Conference.

[13] Leilani Battle, R Jordan Crouser, Audace Nakeshimana, Ananda Montoly, Remco Chang, and Michael Stonebraker. The role of latency and task complexity in predicting visual search behavior. *IEEE transactions on visualization and computer graphics*, 26(1):1246–1255, 2019. Paper appeared in the InfoVis Conference.

[14] Lei Cao, Wenbo Tao, Sungtae An, Jing Jin, Yizhou Yan, Xiaoyu Liu, Wendong Ge, Adam Sah, Leilani Battle, Jimeng Sun, Remco Chang, Brandon Westover, Samuel Madden, and Michael Stonebraker. Smile: A system to support machine learning on eeg data at scale. *Proceedings of the VLDB Endowment*, 12(12):2230–2241, 2019.

[15] Subhajit Das, Dylan Cashman, Remco Chang, and Alex Endert. BEAMES: Interactive multi-model steering, selection, and inspection for regression tasks. *IEEE computer graphics and applications*, 39(5):20–32, 2019.

[16] Dylan Cashman, Shah Rukh Humayoun, Florian Heimerl, Kendall Park, Subhajit Das, John Thompson, Bahador Saket, Abigail Mosca, John Stasko, Alex Endert, Michael Gleicher, and Remco Chang. A user-based visual analytics workflow for exploratory model analysis. *Computer Graphics Forum*, 38(3):185–199, 2019. Paper appeared in the EuroVis Conference.

[17] Wenbo Tao, Xiaoyu Liu, Yedi Wang, Leilani Battle, Çağatay Demiralp, Remco Chang, and Michael Stonebraker. Kyrix: Interactive pan/zoom visualizations at scale. *Computer Graphics Forum*, 38(3):529–540, 2019. Paper appeared in the EuroVis Conference.

[18] Marianne Procopio, Carlos Scheidegger, Eugene Wu, and Remco Chang. Selective Wander Join: Fast progressive visualizations for data joins. *Informatics*, 6(1):14, 2019.

[19] Gabriel Ryan, Abigail Mosca, Remco Chang, and Eugene Wu. At a Glance: Pixel approximate entropy as a measure of line chart complexity. *IEEE transactions on visualization and computer graphics*, 25(1):872–881, 2019. Paper appeared in the IEEE InfoVis Conference.

[20] Dylan Cashman, Genevieve Patterson, Abigail Mosca, Nathan Watts, Shannon Robinson, and Remco Chang. RNNbow: Visualizing learning via backpropagation gradients in rnns. *IEEE Computer Graphics and Applications*, 38(6):39–50, 2018.

[21] Fumeng Yang, Lane Harrison, Ronald A. Rensink, Steven Franconeri, and Remco Chang. Correlation judgment and visualization features: A comparative study. *IEEE Transactions on Visualization and Computer Graphics*, 25(3):1474–1488, 2018.

[22] Anzu Hakone, Lane Harrison, Alvitta Ottley, Nathan Winters, Caitlin Gutheil, Paul KJ 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*, 23(1):601–610, 2017. Paper appeared in the IEEE InfoVis Conference.

[23] Alvitta Ottley, Evan M Peck, Lane Harrison, Daniel Afergan, Caroline Ziemkiewicz, Holly Taylor, Paul Han, and Remco Chang. Improving bayesian reasoning: The effects of phrasing, visualization, and spatial ability. *IEEE Transactions on Visualization and Computer Graphics*, 22(1):529–538, 2016. Paper appeared in the IEEE InfoVis Conference.

[24] Alex Endert, Remco Chang, Chris North, and Michelle X Zhou. Semantic interaction: Coupling cognition and computation through usable interactive analytics. *IEEE Computer Graphics and Applications*, 35(4):94–99, 2015.

[25] Dong Hyun Jeong, Soo-Yeon Yi, Evan Suma, Byunggu Yu, and Remco Chang. Designing a collaborative visual analytics system to support users' continuous analytical processes. *Human-centric Computing and Information Sciences (Springer)*, 5(1):5, 2015.

[26] R Jordan Crouser, Benjamin Hescott, and Remco Chang. Toward complexity measures for systems involving human computation. *Human Computation*, 1(1):4565, 2014.

[27] Eli T Brown, Alvitta Ottley, Jieqiong Zhao, Quan Lin, Alex Endert, Richard Souvenir, and Remco Chang. Finding Waldo: Learning about users from their interactions. *IEEE Transactions on Visualization and Computer Graphics*, 20(12):1663–1672, 2014. Paper appeared in the IEEE Visual Analytics Science and Technology (VAST) Conference.

[28] Lane Harrison, Fumeng Yang, Steven Franconeri, and Remco Chang. Ranking visualizations of correlation using Weber's Law. *IEEE Transactions on Visualization and Computer Graphics*, 20(12):1943–1952, 2014. Paper appeared in the IEEE InfoVis Conference.

[29] Alvitta Ottley, R Jordan Crouser, Caroline Ziemkiewicz, and Remco Chang. Manipulating and controlling for personality effects on visualization tasks. *Information Visualization*, 14(3):223–233, 2015.

[30] R. Jordan Crouser and Remco Chang. An affordance-based framework for human computation and human-computer collaboration. *IEEE Transactions on Visualization and Computer Graphics*, 18(12):2859–2868, 2012. Paper appeared in the IEEE Visual Analytics Science and Technology (VAST) Conference.

[31] Caroline Ziemkiewicz, Alvitta Ottley, R. Jordan Crouser, Ashley Rye Yauilla, Sara L Su, William Ribarsky, and Remco Chang. How visualization layout relates to locus of control and other personality factors. *IEEE Transactions on Visualization and Computer Graphics*, 19(7):1109–1121, 2013.

[32] Caroline Ziemkiewicz, Alvitta Ottley, R. Jordan Crouser, Krysta Chauncey, Sara L Su, and Remco Chang. Understanding visualization by understanding individual users. *IEEE Computer Graphics and Applications*, 32(6):88–94, 2012.

[33] 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*, 11(3):222–236, 2012.

[34] R. Jordan Crouser, Daniel E Kee, Dong Hyun Jeong, and Remco Chang. Two visualization tools for analysis of agent-based simulations in political science. *IEEE Computer Graphics and Applications*, 32(1):67–77, 2011.

[35] Thomas Butkiewicz, Remco Chang, Zachary Wartell, and William Ribarsky. Alleviating the modifiable areal unit problem within probe-based geospatial analyses. *Computer Graphics Forum*, 29(3):923–932, 2010. Paper appeared in the IEEE EuroVis Conference.

[36] Xiaoyu Wang, Wenwen Dou, Shen-En Chen, William Ribarsky, and Remco Chang. An interactive visual analytics system for bridge management. *Computer Graphics Forum*, 29(3):1033–1042, 2010. Paper appeared in the IEEE EuroVis Conference.

[37] William Pike, John Stasko, Remco Chang, and Theresa O'Connell. Science of interaction. *Information Visualization*, 8:263–274, 2009.

[38] Daniel F. Keefe, Marcus Ewert, William Ribarsky, and Remco Chang. Interactive coordinated multiple-view visualization of biomechanical motion data. *IEEE Transactions on Visualization and Computer Graphics*, 15(6):1383–1390, 2009. Paper appeared in the IEEE SciVis Conference.

[39] Xiaoyu Wang, Dong Hyun Jeong, Wenwen Dou, Seok-Won Lee, William Ribarsky, and Remco Chang. Defining and applying knowledge conversion processes to a visual analytics system. *Computers & Graphics*, 33(5):616–623, 2009.

[40] Dong Hyun Jeong, Caroline Ziemkiewicz, Brian Fisher, William Ribarsky, and Remco Chang. iPCA: An interactive system for PCA-based visual analytics. *Computer Graphics Forum*, 28(3):767–774, 2009. Paper appeared in the IEEE EuroVis Conference.

[41] Wenwen Dou, Dong Hyun Jeong, Felesia Stukes, William Ribarsky, Heather Richter Lipford, and Remco Chang. Recovering reasoning processes from user interactions. *IEEE Computer Graphics and Applications*, 29(3):52–61, 2009.

[42] Remco Chang, Caroline Ziemkiewicz, Tera Marie Green, and William Ribarsky. Defining insight for visual analytics. *IEEE Computer Graphics and Applications*, 29(2):14–17, 2009.

[43] Thomas Butkiewicz, Wenwen Dou, Zachary Wartell, William Ribarsky, and Remco Chang. Multi-focused geospatial analysis using probes. *IEEE Transactions on Visualization and Computer Graphics*, 14(6):1165–1172, Nov.-Dec. 2008. Paper appeared in the IEEE InfoVis Conference.

[44] Dong Hyun Jeong, Chang Song, Remco Chang, and Larry Hodges. User experimentation: An evaluation of velocity control techniques in immersive virtual environments. *Virtual Reality*, 13(1):41–50, Mar 2009.

[45] Remco Chang, Alvin Lee, Mohammad Ghoniem, Robert Kosara, William Ribarsky, Jing Yang, Evan Suma, Caroline Ziemkiewicz, Daniel Kern, and Agus Sudjianto. Scalable and interactive visual analysis of financial wire transactions for fraud detection. *Information Visualization*, 7:63–76, 2008.

[46] Remco Chang, Thomas Butkiewicz, Caroline Ziemkiewicz, Zachary Wartell, Nancy Pollard, and William Ribarsky. Legible simplification of textured urban models. *IEEE Computer Graphics and Applications*, 28(3):27–36, 2008.

[47] Xiaoyu Wang, Erin Miller, Kathleen Smarick, William Ribarsky, and Remco Chang. Investigative visual analysis of global terrorism database. *Computer Graphics Forum (IEEE Eurovis Conference)*, 27(3):919–926, 2008.

[48] Thomas Butkiewicz, Remco Chang, Zachary Wartell, and William Ribarsky. Visual analysis of urban change. *Computer Graphics Forum*, 27(3):903–910, 2008. Paper appeared in the IEEE EuroVis Conference.

[49] Remco Chang, Ginette Wessel, Robert Kosara, Eric Sauda, and William Ribarsky. Legible cities: Focus-dependent multi-resolution visualization of urban relationships. *IEEE Transactions on Visualization and Computer Graphics*, 13(6):1169–1175, Nov.-Dec. 2007. Paper appeared in the IEEE InfoVis Conference.

*Select Refereed Conference / Symposium Publications*

[50] Wenbo Tao, Adam Sah, Leilani Battle, Remco Chang, and Michael Stonebraker. Kyrix-j: Visual discovery of connected datasets in a data lake. In *Conference on Innovative Data Systems Research (CIDR)*, 2022. To appear.

[51] Zhe Wang, Dylan Cashman, Mingwei Li, Jixian Li, Matthew Berger, Joshua A Levine, Remco Chang, and Carlos Scheidegger. NeuralCubes: Deep representations for visual data exploration. In *IEEE Big Data*, 2021. To appear.

[52] Jacob Fisher, Remco Chang, and Eugene Wu. Automatic y-axis rescaling in dynamic visualizations. In *IEEE VIS Conference (Short Paper)*, 2021.

[53] Ab Mosca, Alvitta Ottley, and Remco Chang. Does interaction improve bayesian reasoning with visualization? In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, pages 1–14, 2021.

[54] Yifan Wu, Remco Chang, Joseph M Hellerstein, and Eugene Wu. Facilitating exploration with interaction snapshots under high latency. In *2020 IEEE Visualization Conference (VIS)*, pages 136–140. IEEE, 2020.

[55] Subhajit Das, Dylan Cashman, Remco Chang, and Alex Endert. Gaggle: Visual analytics for model space navigation. In *Graphics Interface Conference*, 2019.

[56] Abigail Mosca, Shannon Robinson, Meredith Clarke, Rebecca Redelmeier, Sebastian Coates, Dylan Cashman, and Remco Chang. Defining an analysis: A study of client-facing data scientists. In *Eurographics Conference on Visualization (EuroVis) Short Paper*, 2019.

[57] Luana Micallef, Hans-Jörg Schulz, Marco Angelini, Michaël Aupetit, Remco Chang, Jörn Kohlhammer, and Adam Perer. The human user in progressive visual analytics. In *Eurographics Conference on Visualization (EuroVis) Short Paper*, 2019.

[58] Wenbo Tao, Xiaoyu Liu, Cagatay Demiralp, Remco Chang, and Michael Stonebraker. Kyrix: Interactive visual data exploration at scale. In *Conference on Innovative Data Systems Research (CIDR)*, 2019.

[59] Leilani Battle, Peitong Duan, Zachery Miranda, Dana Mukusheva, Remco Chang, and Michael Stonebraker. Beagle: Automated extraction and interpretation of visualizations from the web. In *Proceedings of the 2018 SIGCHI Conference on Human Factors in Computing Systems*, page 594. ACM, 2018.

[60] Leilani Battle, Remco Chang, and Michael Stonebraker. Dynamic prefetching of data tiles for interactive visualization. In *Proceedings of the 2016 International Conference on Management of Data*, SIGMOD '16, pages 1363–1375. ACM, 2016.

[61] Beste F. Yuksel, Kurt B. Oleson, Lane Harrison, Evan M. Peck, Daniel Afergan, Remco Chang, and Robert JK Jacob. 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*, pages 5372–5384. ACM, 2016. **Best Paper Award**.

[62] Beste Filiz Yuksel, Daniel Afergan, Evan M Peck, Garth Griffin, Nick Chen, Lane Harrison, Remco Chang, and Robert JK Jacob. BRAAHMS: A novel adaptive musical interface based on user's cognitive state. In *Proceedings of the New Instruments for Musical Expression (NIME)*, 2015.

[63] Alvitta Ottley, Huahai Yang, and Remco Chang. Personality as a predictor of user strategy: How locus of control affects search strategies on tree visualizations. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 3251–3254. ACM, 2015. **Honorable Mention Award**.

[64] 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*, pages 1187–1190. ACM, 2015.

[65] Shaomeng Li, Garth Griffin, Connor Gramazio, Hans-Jorg Schulz, Hank Childs, and Remco Chang. Exploring visualization designs using phylogenetic trees. In *SPIE Visualization and Data Analysis (VDA)*, volume 9397, page 14, 2015. **Best Paper Award**.

[66] Daniel Afergan, Tomoki Shibata, Samuel W Hincks, Evan M Peck, Beste Filiz Yuksel, Remco Chang, and Robert JK Jacob. Brain-based target expansion. In *ACM User Interface Software and Technology Symposium (UIST)*, pages 583–593. ACM, 2014.

[67] Dong Hyun Jeong, Soo-Yeon Ji, Tera Greensmith, Byunggu Yu, and Remco Chang. Understanding implicit and explicit interface tools to perform visual analytics tasks. In *IEEE Conference on Information Reuse and Integration (IRI)*, pages 687–694. IEEE, 2014.

[68] Daniel Afergan, Evan M Peck, Erin T Solovey, Andrew Jenkins, Samuel W Hincks, Eli T Brown, Remco Chang, and Robert JK Jacob. Dynamic difficulty using brain metrics of workload. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 3797–3806. ACM, 2014. **Honorable Mention Award**.

[69] Leilani Battle, Remco Chang, and Michael Stonebraker. Dynamic reduction of query result sets for interactive visualization. In *IEEE Workshop on Big Data Visualization*, 2013.

[70] Evan M Peck, Beste Filiz Yuksel, Alvitta Ottley, Robert JK Jacob, and Remco Chang. Using fNIRS brain sensing to evaluate information visualization interfaces. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 473–482. ACM, 2013.

[71] 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*, pages 2949–2958. ACM, 2013.

[72] R. Jordan Crouser, Jeremy G Freeman, Andrew Winslow, and Remco Chang. Exploring agent-based simulations in political science using aggregate temporal graphs. In *IEEE PacificVis Symposium (Pacific Visualization)*, 2013.

[73] Eli T Brown, Jingjing Liu, Carla E Brodley, and Remco Chang. Dis-function: Learning distance functions interactively. In *IEEE Conference on Visual Analytics Science and Technology (VAST)*, pages 83 –92, Oct 2012.

[74] Caroline Ziemkiewicz, R. Jordan Crouser, Sara L Su, Ashley Rye Yauilla, William Ribarsky, and Remco Chang. How locus of control influences compatibility with visualization style. In *IEEE Conference on Visual Analytics Science and Technology (VAST)*, pages 81–90, Oct 2011. **Honorable Mention Award**.

[75] Wenwen Dou, Xiaoyu Wang, Remco Chang, and William Ribarsky. Parallel topics: A probabilistic approach to exploring document collections. In *IEEE Conference on Visual Analytics Science and Technology (VAST)*, pages 231–240, Oct 2011.

[76] Chris North, Remco Chang, Alex Endert, Wenwen Dou, Richard May, William Pike, and Glenn Fink. Analytic provenance: Process + interaction + insight. ACM SIGCHI Extended Abstracts, 2011. Panel Abstract.

[77] Scott Spurlock, Remco Chang, Xiaoyu Wang, George Arceneaux IV, Daniel F. Keefe, and Richard Souvenir. Combining automated and interactive visual analysis of biomechanical motion data. In *Proceedings of the 6th international conference on Advances in visual computing (ISVC)*, pages 564–573. Springer-Verlag, 2010.

[78] 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 *IEEE Conference on Visual Analytics Science and Technology (VAST)*, pages 195 –202, Oct 2010.

[79] Heather Richter Lipford, Felesia Stukes, Wenwen Dou, Matthew E. Hawkins, and Remco Chang. Helping users recall their reasoning process. In *IEEE Conference on Visual Analytics Science and Technology (VAST)*, pages 187 –194, Oct 2010.

[80] Ginette Wessel, Caroline Ziemkiewicz, Remco Chang, and Eric Sauda. GPS and road map navigation: the case for a spatial framework for semantic information. In *Proceedings of the International Conference on Advanced Visual Interfaces (AVI)*, pages 207–214. ACM, 2010.

[81] Dong Hyun Jeong, Wenwen Dou, Felesia Stukes, William Ribarsky, Heather Richter Lipford, and Remco Chang. Evaluating the relationship between user interaction and financial visual analysis. In *IEEE Symposium on Visual Analytics Science and Technology (VAST)*, pages 83–90, 2008.

[82] Ginette Wessel, Remco Chang, and Eric Sauda. Visualizing gis: Urban form and data structure. In Dietmar Froehlick and Michaele Pride, editors, *Seeking the City: Visionaries on the Margins, 96th Annual Conference of Association of Collegiate Schools of Architecture (ACSA)*, pages 378–384. Association of Collegiate Schools of Architecture, 2008.

[83] Thomas Butkiewicz, Remco Chang, Zachary Wartell, and William Ribarsky. Analyzing sampled terrain volumetrically with regard to error and geologic variation. *SPIE Visualization and Data Analysis (VDA)*, 6495(1):64950O, 2007.

[84] Remco Chang, Mohammad Ghoniem, Robert Kosara, William Ribarsky, Jing Yang, Evan Suma, Caroline Ziemkiewicz, Daniel Kern, and Agus Sudjianto. Wirevis: Visualization of categorical, time-varying data from financial transactions. In *IEEE Symposium on Visual Analytics Science and Technology (VAST)*, pages 155–162, 30 2007-Nov. 1 2007. **Runner-up Best Paper Award**.

[85] Remco Chang, Thomas Butkiewicz, Caroline Ziemkiewicz, Zachary Wartell, Nancy Pollard, and William Ribarsky. Hierarchical simplification of city models to maintain urban legibility. In *SIGGRAPH '06: ACM SIGGRAPH 2006 Sketches*, page 130, New York, NY, USA, 2006. ACM.

*Other Refereed Conference / Symposium / Workshop Publications*

[86] Dylan Cashman, Yifan Wu, Remco Chang, and Alvitta Ottley. Inferential tasks as a data-rich evaluation method for visualization. In *IEEE Visualization Workshop on Evaluation of Interactive Visual Machine Learning Systems (EVIVA-ML)*, 2019.

[87] Eli Brown, Sriram Yarlagadda, Kristin Cook, Remco Chang, and Alex Endert. ModelSpace: Visualizing the trails of data models in visual analytics systems. In *IEEE Visualization Workshop on Machine Learning from User Interactions*, 2018.

[88] Subhajit Das, Dylan Cashman, Remco Chang, and Alex Endert. BEAMES: Interactive multi-model steering and inspection for regression tasks. In *IEEE Visualization Symposium on Visualization in Data Science (VDS)*, 2018. **Best Paper Award**.

[89] Dylan Cashman, Genevieve Patterson, Abigail Mosca, and Remco Chang. RNNbow: Visualizing learning via the backpropagated gradients in recurrent neural networks. In *IEEE Visualization Workshop on Visual Analytics for Deep Learning*, 2017. **Best Paper Award**.

[90] Marianne Procopio, Carlos Scheidegger, Eugene Wu, and Remco Chang. Load-n-go: Fast approximate join visualizations that improve over time. In *IEEE Visualization Workshop on Data Systems for Interactive Analysis (DSIA)*, 2017.

[91] Leilani Battle, Remco Chang, Jeffrey Heer, and Michael Stonebraker. Position statement: The case for a visualization performance benchmark. In *IEEE Visualization Workshop on Data Systems for Interactive Analysis (DSIA)*, 2017.

[92] Yifan Wu, Larry Xu, Remco Chang, and Eugene Wu. Towards a bayesian model of data visualization cognition. In *IEEE Visualization Workshop on Dealing with Cognitive Biases in Visualisations (DECISIVe)*, 2017.

[93] Eli Brown, Alex Endert, and Remco Chang. Human-machine-learner interaction: The best of both worlds. In *CHI Workshop on Human Centred Machine Learning (HCML)*, 2016.

[94] Beste Filiz Yuksel, Kurt Oleson, Remco Chang, and Robert JK Jacob. Position paper: Measuring users' cognitive and affective state to develop intelligent musical interfaces. In *CHI Workshop on Music and HCI (HCIMUSIC)*, 2016.

[95] Leilani Battle, Remco Chang, and Michael Stonebraker. Position statement: Front-end aware optimization for scalable visual exploration systems. IEEE Visualization Workshop on Data Systems for Interactive Analysis (DSIA), 2015.

[96] Alex Endert, Chris North, Remco Chang, and Michelle X Zhou. Position paper: Toward usable interactive analytics: Coupling cognition and computation. In *KDD Workshop on Interactive Data Exploration and Analytics (IDEA)*, 2014.

[97] Eli T Brown and Remco Chang. Work in progress: Eigensense: Saving user effort with active metric learning. In *KDD Workshop on Interactive Data Exploration and Analytics (IDEA)*, 2014.

[98] Alvitta Ottley, Evan M Peck, Lane Harrison, and Remco Chang. The adaptive user: Priming to improve interaction. In *CHI Workshop on Many People Many Eyes*, 2013.

[99] Daniel Afergan, Evan M Peck, Remco Chang, and Robert JK Jacob. Using passive input to adapt visualization systems to the individual. In *CHI Workshop on Many People Many Eyes*, 2013.

[100] Evan M Peck, Beste Filiz Yuksel, Lane Harrison, Alvitta Ottley, and Remco Chang. Towards a 3-dimensional model of individual cognitive differences: position paper. In *Proceedings of the 2012 BELIV Workshop: Beyond Time and Errors - Novel Evaluation Methods for Visualization*, BELIV '12, pages 36–48, 2012.

[101] Wenwen Dou, William Ribarsky, and Remco Chang. Capturing reasoning process through user interaction. In *IEEE EuroVis Symposium on Visual Analytics (EuroVAST)*, 2010.

[102] Remco Chang, Caroline Ziemkiewicz, Roman Pyzh, Joseph Kielman, and William Ribarsky. Learning-based evaluation of visual analytic systems. In *Proceedings of the 3rd BELIV'10 Workshop: BEyond time and errors: novel evaLuation methods for Information Visualization*, BELIV '10, pages 29–34, 2010.

[103] Ginette Wessel, Elizabeth Unruh, Remco Chang, and Eric Sauda. Urban user interface: Urban legibility reconsidered. In *Southwest ACSA (Association of Collegiate Schools of Architecture)*, 2010.

[104] Lane Harrison, Thomas Butkiewicz, Xiaoyu Wang, William Ribarsky, and Remco Chang. A linked feature space approach to exploring lidar data. In *SPIE*, volume 7709, page 25, 2010.

[105] Dong Hyun Jeong, Wenwen Dou, William Ribarsky, and Remco Chang. Knowledge-oriented refactoring in visualization. In *IEEE Visualization Workshop on Refactoring Visualization From Experience (REVISE)*, 2009.

[106] Dong Hyun Jeong, William Ribarsky, and Remco Chang. Designing a pca-based collaborative visual analytics system. In *IEEE Visualization Workshop on Collaborative Visualization*, 2009.

[107] Wenwen Dou, Dong Hyun Jeong, Felesia Stukes, William Ribarsky, Heather Richter Lipford, and Remco Chang. Comparing usage patterns of domain experts and novices in visual analytical tasks. In *ACM SIGCHI Sensemaking Workshop*, 2009.

[108] Xiaoyu Wang, Wenwen Dou, Rashna Vatcha, Wanqiu Liu, Shen-En Chen, Seok-Won Lee, Remco Chang, and William Ribarsky. Knowledge integrated visual analysis of bridge safety and maintenance. In *SPIE Defense, Security and Sensing*, pages 7346–5, 2009.

[109] Xiaoyu Wang, Wenwen Dou, William Ribarsky, and Remco Chang. Integration of heterogeneous processes through visual analytics. In *SPIE Defense, Security and Sensing*, pages 7346–10, 2009.

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*Book Chapters*

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*Introductions*

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*Posters / Tech Reports / Abstracts / Theses*

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[128] Bo Kang, Dylan Cashman, Remco Chang, Jefrey Lijffijt, and Tijl De Bie. Clippr: Maximally informative clipped projections with bounding regions. Poster, IEEE Conference on Visual Analytics (VAST), 2018.

[129] Shah Rukh Humayoun, Dylan Cashman, Florian Heimerl, and Remco Chang. A visual analytics framework for automated machine learning. Poster, IEEE Conference on Visual Analytics (VAST), 2018.

[130] Gabriel Ryan, Abigail Mosca, Eugene Wu, and Remco Chang. Approximate entropy as a measure of line chart complexity. Poster, IEEE Conference on Information Visualization (InfoVis), 2017.

[131] Leilani Battle, Remco Chang, and Michael Stonebraker. Dynamic generation and prefetching of data chunks for exploratory visualization. Poster, IEEE Conference on Information Visualization (InfoVis), 2014.

[132] Jieqiong Zhao, Quan Lin, Alvitta Ottley, and Remco Chang. Modeling user interactions for complex visual search tasks. Poster, IEEE Conference on Visual Analytics (VAST), 2013.

[133] Alvitta Ottley, Blossom Metevier, Paul K. J. Han, and Remco Chang. Visually communicating bayesian statistics to laypersons. Technical Report TR-22-02, Department of Computer Science, Tufts University, December 2012.

[134] Connor Gramazio and Remco Chang. Optimizing an spt-tree for visual analytics. Poster, IEEE Conference on Visual Analytics (VAST), 2012.

[135] Lane Harrison, Remco Chang, and Aidong Lu. Exploring the impact of emotion on visual judgement. Poster, IEEE Conference on Visual Analytics (VAST), 2012. **Best Poster Award**.

[136] Alvitta Ottley, Caroline Ziemkiewicz, R. Jordan Crouser, and Remco Chang. Priming locus of control to affect performance. Poster, IEEE Conference on Visual Analytics (VAST), 2012.

[137] Daniel E Kee, Liz Salowitz, and Remco Chang. Comparing interactive web-based visualization rendering techniques. Poster, IEEE Conference on Information Visualization (InfoVis), 2012.

[138] Evan M Peck, Erin T Solovey, Sara L Su, Robert JK Jacob, and Remco Chang. Near to the brain: Functional near-infrared spectroscopy as a lightweight brain imaging technique for visualization. Poster, IEEE Conference on Information Visualization (InfoVis), 2011. **Best Poster Award**.

[139] Garth Griffin, Shaomeng Li, Connor Gramazio, and Remco Chang. An analytical approach for the creative design of new visualizations. Poster, IEEE Conference on Information Visualization (InfoVis), 2011.

[140] Dong Hyun Jeong, Soo-Yeon Ji, William Ribarsky, and Remco Chang. A state transition approach to understanding users' interactions. Poster, IEEE Conference on Visual Analytics (VAST), 2011.

[141] Jingjing Liu, Eli T Brown, and Remco Chang. Find distance function, hide model inference. Poster, IEEE Conference on Visual Analytics (VAST), 2011.

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[145] Dong Hyun Jeong, Tera Marie Green, William Ribarsky, and Remco Chang. Comparative evaluation of two interface tools in performing visual analytics tasks. In *ACM SIGCHI BELIV Workshop (Beyond time and errors: novel evaluation methods for information visualization)*, 2010. Short Paper.

[146] Dong Hyun Jeong, Evan Suma, Thomas Butkiewicz, William Ribarsky, and Remco Chang. A continuous analysis process between desktop and collaborative visual analytics environments. Poster, IEEE Conference on Visual Analytics (VAST), 2010.

[147] Remco Chang. *Thinking Interactively with Visualizations*. PhD thesis, University of North Carolina Charlotte, Dec 2009.

[148] Dong Hyun Jeong, Tera Marie Green, William Ribarsky, and Remco Chang. Comparing two interface tools in performing visual analytics tasks. Poster, IEEE Symposium on Visual Analytics (VAST), 2009.

[149] Dong Hyun Jeong, William Ribarsky, and Remco Chang. Creating a knowledge structure in real-time. Poster, IEEE Symposium on Visualization (Eurovis), 2009.

[150] Remco Chang, Robert Kosara, Alex Godwin, and William Ribarsky. Towards a role of visualization in social modeling. AAAI 2009 Spring Symposium on Technosocial Predictive Analytics, 2009.

[151] Ginette Wessel, Eric Sauda, and Remco Chang. Mapping understanding: Transforming topographic maps into cognitive maps. GeoVis Hamburg Workshop, 2009.

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[153] Alex Godwin, Remco Chang, Robert Kosara, and William Ribarsky. Visual data mining of unevenly-spaced event sequences. Interactive Poster, IEEE Symposium on Visual Analytics (VAST), 2008. **Best Poster Award**.

[154] Ginette Wessel, Remco Chang, and Eric Sauda. User-centric mapping. SIGGRAPH 2008 Late Breaking Work, August 2008.

[155] Caroline Ziemkiewicz, Xiaoyu Wang, Alex Godwin, Wenwen Dou, Remco Chang, Robert Kosara, and William Ribarsky. Global terrorism visualization. Student Poster Session at DHS University Network Summit, 2008.

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## Grants

PI **Merck (Exploratory Science Center)**, *Dimension Reduction Visualization of Single Cell Data*, 2022-2023, $182,771.
PI: Remco Chang

**National Science Foundation**, *Collaborative Research: Accelerating the Discovery of Electronic Materials through Human-Computer Bayesian Optimization (OAC-1940175)*, 2019-2021, $231,838.
PI: Remco Chang, Co-PIs: Eric Toberer, Steven Lopez, Roman Garnett, Jane Greenberg

**National Science Foundation**, *Collaborative Research: Converging Genomics, Phenomics, and Environments Using Interpretable Machine Learning Models (OAC-1939945)*, 2019-2021, $299,520.
PI: Remco Chang, Co-PIs: Anne Thessen, Bryan Heidorn, Arun Ross, Tyson Swetnam, Pankaj Jaiswal

**DARPA CHESS (via Aptima, Inc)**, *CHECKMATE: Computer Human Enhanced Coordination for Knowledge, Management, Analysis, & Testing for Exploits (FA875019C0002)*, 2019-2023, $598,635 (out of $4.5M).
PI: Remco Chang

**Navy (via Aptima, Inc)**, *STTR: TACTIC-D: Techniques to Adjust Computational Trends Involving Changing Data (N68335-17-C-0656)*, 2017-2021, $70,134 (Phase I), $206,994 (Phase II).
PIs: Remco Chang, Brent Fegley (Aptima)

**DARPA D3M**, *User-Driven Model Steering and Curation via Inference from Interaction and Model-Space Sampling (FA8750-17-2-0107)*, 2017-2021, $2,697,595.
Project Supplement $65,000 (2018), IRB Supplement $15,000 (2018)
PI: Remco Chang, Co-PIs: Michael Gleicher, John Stasko, Alex Endert

**National Science Foundation**, *CAREER: Analyzing Interactions in Visual Analytics for User and Data Modeling (IIS-1452977)*, 2015-2021, $499,948.
REU Supplement $16,000 (2015), $16,000 (2018), NSF-ERC Supplement $5,928 (2017)
PI: Remco Chang

**MIT Lincoln Laboratory**, *Adaptive, Reinforced, Interactive Visual Analytics*, 2014-2015, $75,000.
PI: Remco Chang

**National Science Foundation (Human-Centered Computing)**, *CGV: HCC: Small: Toward Objective, In-Situ, and Generalizable Evaluation of Visual Analytics by Integrating Brain Imaging with Cognitive Factors Analysis (IIS-1218170)*, 2012-2016, $499,892.
REU Supplement $15,500 (2014)
PI: Remco Chang, Co-PIs: Rob Jacob, Caroline Ziemkiewicz

**National Science Foundation (Social and Economic Sciences)**, *SES: NSCC: Collaborative Research: Terror, Conflict Processes, Organizations, & Ideologies: Completing the Picture (Funded by DoD as part of the Minerva Initiative) (BCS-1128492)*, 2009-2011, $100,000.
PI: Remco Chang

co-PI **National Science Foundation**, *HDR Institute: Institute for Data Driven Dynamical Design (OAC-2118201)*, 2021-2026, $6,100,000.
PI: Eric Toberer, Co-PIs: Steven Lopez, Alvitta Ottley, Adji Bousso, Ryan Adams

**National Science Foundation (Research Training Program))**, *Data Driven Decision Making to Address Complex Resource Problems (NRT-2021874)*, 2020-2025, $2,999,878.
PI: Shafiqul Islam, Co-PI: Remco Chang, David Hammer, Jonathan Lamontagne, Abani Patra

**Missile Defense Agency (via Triton Systems, Inc)**, *STTR: MIDAS: Multisensory Interactive Data Analysis System (HQ014719C7056)*, 2019-2022, $129,700 (Phase 1), $369,402 (Phase 2).
PIs: James Intriligator (Tufts), Jeff Gilbert (Triton), Co-PIs: Dan Hannon, Charles Hannon, Remco Chang

**National Science Foundation (Innovations in Graduate Education)**, *STEM Graduate training in Data Science: Solution-oriented, Student-led, Team-based, Computationally-Enriched (SOLSTICE) Training (DGE-1855886)*, 2019-2023, $499,733.
PI: Elena Naumova, Co-PI: Barbara Brizuela, Remco Chang

**Walmart Foundation**, *Behavioral Nudges*, 2018-2021, $153,347.
PI: Norbert Wilson, Co-PI: Remco Chang

**Draper Laboratory (University Research and Development Program)**, *User-Guided Clustering: A Synergy of Human Interaction, Machine Learning and Visualization*, 2012-2013, $132,000.
PI: Carla Brodley, Co-PI: Remco Chang

**National Science Foundation (Social, Behavioral & Economic Sciences)**, *SBE: SciSIP: A Visual Analytics Approach to Science and Innovation Policy (SBE-0915528)*, 2009-2012, $746,567.
PI: William Ribarsky, Co-PIs: Jim Thomas, Remco Chang, Jing Yang

**Department of Homeland Security (International Program)**, *Deriving and Applying Cognitive Principles for Human/Computer Approaches to Complex Analytical Problems (2009-ST-108-000007)*, 2009-2010, $200,000.
PI: William Ribarsky, Co-PIs: Brian Fisher, Remco Chang, John Dill

University **Tufts Collaborates Program**, *A Cohort to Capture Behavior Change and Personalized Dietary Patterns*, 2016-2017, $49,717.
PI: Nicola McKeown, Co-PI: Sara Folta, Remco Chang, Alice Lichtenstein, Christina Economos, Christian Peters, Paul Jacques

**Tufts Center for Applied Brain Sciences and Cognitive Sciences (Funded by the US Army)**, *Analyzing Users' Gaze and Mouse Interactions in Bayesian Reasoning Tasks*, 2015-2016, $15,000.
PI: Remco Chang, Co-PI: Paul Han, Holly Taylor

**Tufts Clinical and Translational Science Institute**, *Development of the Prognosis Assessment for Active and Conservative Treatment Tool*, 2014-2015, $30,000.
PI: Paul Han, Co-PI: Remco Chang

**Tufts Collaborates Program**, *Better Health Decisions through Visualization*, 2013-2014, $49,946.
PI: Remco Chang, Co-PIs: Holly Taylor, Paul Han

**Tufts Collaborates Program**, *Visualizing the Circulation of Ideas Across Language, Culture and Space: How Researchers in the Middle East Read Greek and Invented the West*, 2011-2012, $50,000.
PI: Gregory Crane, Co-PIs: Remco Chang, Kamran Rastegar, Kenneth Garden, Malik Mufti

**Tufts Collaborates Program**, *Advancing Disaster Research with Geospatial New Media*, 2011-2012, $49,000.
PI: Patrick Florance, Co-PIs: Remco Chang, Laurie Baise, Peter Walker, Patrick Webb, Barbara Parmenter, Denise Rosalind Sewell

Non-Research

**National Science Foundation (Information and Intelligent Systems)**, *Workshop: Support for 2020 Visualization Early Career Faculty Workshop (IIS-2028384)*, 2020, $16,053.
PI: Remco Chang, Co-PI: Kristi Potter

**IEEE VIS**, *VIS Summer Camp (Workshop for mentoring untenured professors in VIS)*, 2017 ($4,500), 2018 ($5,621), 2019 ($4,578).
PI: Remco Chang, Co-PI: Kristi Potter

**National Science Foundation (Information and Intelligent Systems)**, *Workshop: Doctoral Colloquium at IEEE VIS 2013 (IIS-1341912)*, 2013, $20,000.
PI: Niklas Elmqvist, Co-PIs: Remco Chang, Jian Chen

## Editorial Activities

Associate Editor

**IEEE Transactions on Visualization and Computer Graphics (TVCG)**, *2021-present.*

**ACM Transactions on Interactive Intelligent Systems (TiiS)**, *2014-present.*

**Journal of Human Computation**, *2014-2018.*

Book Chapter

**Human Computation Handbook**, *Section editor for "Algorithms"*, Springer (ed: Pietro Michelucci), 2012-13.
co-editor: Caroline Ziemkiewicz

Guest Editor

**ACM Transactions on Interactive Intelligent Systems (TiiS)**, *Special Issue on Interactive Visual Analytics for Making Explainable and Accountable Decisions*, 2019-20.
co-editors: Cagatay Turkay, Tatiana von Landesberger, Shixia Liu, Daniel Archambault

**Behaviour & Information Technology (Taylor & Francis)**, *Special Issue on Human Centric Visual Analytics*, 2018-19.
co-editors: Weidong Huang, Yuhua Luo, Brian Fisher

**IEEE Computer Graphics and Applications (CG&A)**, *Special Issue on Visualization Connections*, 2017-18.
co-editors: Peter Lindstrom, Huamin Qu

**ACM Transactions on Interactive Intelligent Systems (TiiS)**, *Special Issue on Computational Visual Analytics*, 2012-13.
co-editors: David Ebert, Daniel Keim

## Conference Activities

**Organization**

- PacificVis 2021 Best Paper Committee
  co-chairs: Jinwook Seo and Thomas Ertl
- VAST 2020 Test-of-Time Award Committee
  co-chairs: Giuseppe Santucci and Brian Fisher
- VAST 2020 Best Paper Committee
  co-chairs: Min Chen, Liz Marai
- Paper Chair: IEEE VAST 2019
  co-chairs: Daniel Keim, Ross Maciejewski
- VAST 2019 Test-of-Time Award Committee
  co-chairs: Giuseppe Santucci and Brian Fisher
- Paper Chair: IEEE VAST 2018
  co-chairs: Tobias Schreck, Huamin Qu
- Steering Committee: Data Systems for Interactive Analysis (DSIA), 2018
  co-chairs: Carlos Scheidegger, Jeff Heer, Danyel Fisher
- Workshop Organizer: Machine Learning from User Interaction for Visualization and Analytics, 2018-19
  co-organizers: John Wenskovitch, Michelle Dowling, Chris North, Remco Chang, Alex Endert, David Rogers
- Workshop Chair: KDD Interactive Data Exploration and Analysis (IDEA) Workshop, 2018
  co-organizers: Jefrey Lijffijt, Minsuk Kahng, Polo Chau, Dafna Shahaf, Christos Faloutsos
- VIS Summer Camp (Workshop for mentoring untenured professors in VIS), 2016-18
  co-organizer: Kristi Potter
- Dagstuhl Seminar on Connecting Visualization and Data Management Research, 2017
  co-organizers: Carlos Scheidegger, Jean-Daniel Fekete, Juliana Freire
- Session Chair: IEEE VAST 2017. Session: High-Dimensional Data
- Workshop Chair: IEEE VAST Conference 2017
  co-organizers: Huamin Qu, Peter Lindstrom
- Workshop Organizer: Data Systems for Interactive Analysis (DSIA), 2015, 2017
  co-organizers: Carlos Scheidegger, Jeff Heer, Danyel Fisher
- Panel Chair: IEEE VAST Conference 2016
  co-organizers: Hieke Leitte, Michael Sedlmair
- Workshop Organizer: BostonVIS 2014-16
- Session Chair: VAST 2015. Session: Complementing Visual and Algorithmic Analysis
- Committee: VAST Best Poster Committee, 2014
  co-chairs: Ross Maciejewski, Heidrun Schumann
- Workshop Organizer: Semantic Interaction, Pacific Northwest National Lab 2014
  co-chairs: Alex Endert, Chris North, Michelle Zhou
- Workshop Organizer: Exploratory Data Analysis, SIAM Conference on Data Mining 2014
  co-organizers: Haesun Park, Jaegul Choo, Zhicheng (Leo) Liu
- Doctoral Colloquium Chair: IEEE VAST Conference 2013
  co-chairs: Niklas Elmqvist (InfoVis), Jian Chen (SciVis)
- Session Chair: IEEE VIS 2013. Session: TVCG-Information Visualization
- Workshop Organizer: Toward Social Computing as a Discipline, SocialCom 2013
  co-organizers: Pietro Michelucci, Haym Hirsh
- Session Leader in Visual Analytics: Tufts World Health Day Conference 2013
- Poster Chair: IEEE VAST Conference 2012
  co-chair: Ross Maciejewski
- Session Chair: ACM CHI 2012. Session: Search Interfaces
- Poster Chair: IEEE VAST Conference 2011
  co-chair: Jo Wood
- Panel Organizer: IEEE InfoVis Panel: Process + Interaction + Insight: The Need for Analytic Provenance, 2011. **Best Panel Award**
  co-organizier: TJ Jankun-Kelly

- Workshop Organizer: ACM CHI Workshop on Analytic Provenance: Process + Interaction + Insight, 2011
  co-organizers: Chris North, Richard May, Alex Endert, Wenwen Dou, Glenn Fink

**Program Committee**

- ECML-PKDD Workshop on Automating Data Science (AutoDS), 2021
- Eurographics Conference on Data Visualization (EuroVis), 2014-16, 2019-21
ACM SIGMOD Workshop on Human-In-the-Loop Data Analytics (HILDA), 2016-20
- IEEE Visualization Conference Doctoral Colloquium, 2010-11, 2019
- VIS Workshop on Data Systems for Interactive Analysis (DSIA), 2019
- International Conference on Computational Creativity, 2019
- International (EDBT/ICDT) Workshop on Big Data Visual Exploration and Analytics (BigVis), 2018
- IEEE VIS Workshop on Visual Analytics for Deep Learning (VADL), 2018
- ACM IUI Workshop on Exploratory Search and Interactive Data Analytics, 2018
- IEEE Conference on Visual Analytics Science and Technology (VAST), 2010-2012, 2015-17
- SIGGRAPH Asia Symposium on Visualization, 2016-17
- Grace Hopper Conference Gaming/Graphics/Animation (GFX) track, 2016
- Supercomputing (SC14) Workshop on Visual Performance Analytics, 2014-2016
- Grace Hopper Conference Gaming/Graphics/Animation (GFX) track, 2016
- ACM SIGCHI Conference on Computer Human Interaction (CHI), 2012, 2016
- ACM Intelligent User Interface (IUI) Workshop on Emotion and Visualization (EmoVis), 2016
- Big Data Visual Analytics Symposium (BDVA), 2015
- Big Data and Data Analytics in Collaboration Symposium, 2015
- Eurographics Conference on Visualization (EuroVis) Short Paper Program, 2015
- Eurographics/IEEE International Workshop on Visual Analytics (EuroVA), 2011-15
- IEEE Conference on Information Visualization (InfoVis), 2013-14
- IEEE VIS Workshop on Beyond Time and Errors (BELIV), 2014
- International Conference on Information Visualization Theory and Applications (IVAPP) 2013-14
- SPIE Visualization and Data Analysis (VDA), 2012-13
- IEEE VisWeek Workshop on Beyond Time and Errors (BELIV), 2012
- Foundation of Digital Games, 2012
- International Provenance and Annotation Workshop, 2012
- ACM SIGCHI Workshop on Beyond Time and Errors (BELIV), 2010
- AAAI Spring Symposium on Technosocial Predictive Analytics, 2009

**Invited Panels & Workshops**

- Shonan Seminar: Interactive Visualization for Interpretable Machine Learning, 2019
- IEEE Symposium on Large Data Analysis and Visualization (LDAV). Panel: AI+VIS in the Era of Big Data, 2019
- IEEE VIS Workshop on Machine Learning from User Interactions for Visualization and Analytics, 2019
- IEEE VIS Workshop on Evaluation of Interactive Visual Machine Learning Systems, 2019
- Dagstuhl Seminar: Visual Analytics of Multilayer Networks Across Disciplines, 2019
- IEEE Symposium on Large Data Analysis and Visualization (LDAV). Panel: Progressive Visualization and Visual Analytics, 2018
- Dagstuhl Seminar: Provenance and Logging for Sense Making, 2018
- Dagstuhl Seminar: Progressive Data Analysis and Visualization, 2018
- Dagstuhl Seminar: Automating Data Science, 2018
- IEEE VIS Conference. Panel: Reflection on Reflection in Design Studies, 2017
- Dagstuhl Seminar: Connecting Visualization and Data Management Research, 2017
- Dagstuhl Seminar: Scientific Visualization, 2014
- Dagstuhl Seminar: Evaluation in the Crowd: Crowdsourcing and Human-Centered Experiments, 2015

- Dagstuhl Seminar: Connecting Performance Analysis and Visualization to Advance Extreme Scale Computing, 2014
- Joint Statistical Meetings. Panel: User Interaction and Feedback: Data, Models, and Interfaces, 2013
- Tufts World Health Day Conference, 2013
- IEEE VAST Conference. Panel: VAST Challenge Future, 2012
- IEEE InfoVis Conference. Panel: Process + Interaction + Insight: The Need for Analytic Provenance, 2011
- IEEE VAST Conference. Panel: VAST Challenge Future, 2010
- National Visual Analytics Consortium. Panel: High-Priority Research Directions for Visual Analytics, 2009
- Third Annual DHS University Summit. Panel: Research to Reality, 2009
- Third Annual DHS University Summit. Panel: Visual Analytics and Discrete Science Integration into the DHS Center of Excellence Program, 2009

## Reviewing Activities

Proposal

- National Science Foundation (NSF), 2021
- National Science Foundation (NSF), 2021
- Mitacs Accelerate (Canada), 2021
- National Science Foundation (NSF), 2020
- Cyprus Seeds Program, 2020
- National Science Foundation (NSF), 2020
- Mitacs Accelerate (Canada), 2019
- National Science Foundation (NSF), 2018
- National Science Foundation (NSF), 2018
- National Science Foundation (NSF), 2017
- Natural Sciences and Engineering Research Council of Canada (NSERC), 2017
- National Science Foundation (NSF), 2016
- National Science Foundation (NSF), 2016
- Mitacs Accelerate (Canada), 2016
- National Science Foundation (NSF), 2015
- Austrian Science Fund (FWF), 2015
- Netherlands Organisation for Scientific Research (NWO), 2015
- National Science Foundation (NSF), 2015
- National Science Foundation (NSF), 2014
- Austrian Science Fund (FWF), 2014
- National Science Foundation (NSF), 2014
- DIGITEO and DigiCosme (France), 2014
- National Science Foundation (NSF), 2013
- National Science Foundation (NSF), 2013
- National Science Foundation (NSF), 2013
- Austrian Science Fund (FWF), 2012
- National Science Foundation (NSF), 2012
- Natural Sciences and Engineering Research Council of Canada (NSERC), 2012
- Research Councils UK (RCUK), 2012
- National Science Foundation (NSF), 2011
- Greek Ministry of Education, Lifelong Learning and Religious Affairs and the European Social Fund, 2011
- National Science Foundation (NSF), 2010
- The Vienna Science and Technology Fund (WWTF), 2010

Book Proposal

- CRC Press, 2020
- Chapman & Hall/CRC, 2018
- Morgan & Claypool, 2016
- Morgan Kaufmann, 2016
- Wiley, 2016

- Morgan Kaufmann, 2014

Journal
- IEEE Transactions on Computer Graphics and Visualization (TVCG), 2005, 2007-2021
- IEEE Computer Graphics and Applications (CG&A), 2009-2017, 2019-21
- ACM Transactions on Interactive Intelligent Systems (TiiS), 2012-2021
- PLOS ONE, 2020
- IEEE Transactions on Learning Technologies, 2020
- Heliyon (Cell Press), 2020
- Journal of Experimental Psychology: Applied, 2020
- Information Visualization (Palgrave/Sage), 2009-2014, 2019
- ACM Transactions on Computing Education, 2019
- International Journal of Computer Assisted Radiology and Surgery, 2018
- Journal of Visual Communication in Medicine (Taylor & Francis), 2018
- Accounting Information Systems (Elsevier), 2017
- Computer Graphics Forum (Wiley), 2009, 2013-2014, 2017
- ACM Transactions on Intelligent Systems and Technology (TIST), 2012, 2017
- Applied Ergonomics (Elsevier), 2017
- Computers, Environment and Urban Systems (Elsevier), 2009-2017
- ACM SIGMOD Record, 2016
- Journal of Visual Languages and Computing (Elsevier), 2016
- Journal of the American Medical Informatics Association (JAMIA), 2016
- Information and Management (Elsevier), 2016
- IEEE Transactions on Knowledge and Data Engineering (TKDE), 2015-16
- International Journal of Human-Computer Interaction (Taylor & Francis), 2015
- American Statistician (Taylor & Francis), 2014-2015
- Computers and Graphics (Elsevier), 2010, 2015
- International Journal of Human-Computer Studies (Elsevier), 2015
- Computing and Visualization in Science (Springer), 2014
- ACM Transactions on Computer Human Interaction (TOCHI), 2012-2014
- Information Technology (Gruyter Oldenbourg), 2014
- Künstliche Intelligenz (German AI Journal, Springer), 2011-12
- Journal of Geographical Information Science (Taylor & Francis), 2009-2010
- The Visual Computer (Springer), 2010

Conference
- Eurographics Conference on Data Visualization (Eurovis), 2005, 2010-2016, 2020-21
- ACM Special Interest Group on Computer Human Interaction (CHI), 2010-2021
- ACM Symposium on User Interface Software and Technology (UIST), 2012, 2014-2015, 2018
- IEEE Pacific Visualization, 2011-12, 2015-2017
- ACM Computer-Supported Cooperative Work (CSCW), 2016
- IEEE Conference on Information Visualization (InfoVis), 2008-2011, 2013-2015
- IEEE Symposium/Conference on Visual Analytics Science and Technology (VAST), 2007, 2009-2012, 2015-2020
- ACM SIGCHI Student Research Competition, 2014
- Conference on Tangible, Embedded, and Embodied Interaction (TEI), 2014
- IEEE Symposium on Biological Data Visualization (BioVis), 2013
- International Conference on Intelligent User Interfaces (IUI), 2013
- SPIE Visualization and Data Analysis (VDA), 2009, 2012-2013
- Computer Graphics International Conference, 2005, 2012
- IEEE Conference on Visualization (SciVis), 2008-2011
- ACM Interactive Tabletops and Surfaces Conference, 2011
- ACM SIGGRAPH Asia, 2009

Workshop
- IEEE Visual Analytics Science and Technology (VAST) Challenge, 2009-2010, 2012-2017
- NSF Data Science Workshop, 2015

- Big Data Visual Analytics Symposium (BDVA), 2015
- Big Data and Data Analytics in Collaboration Symposium, 2015
- Supercomputing (SC14) Workshop on Visual Performance Analytics, 2014
- CHI/VisWeek Workshop on Beyond Time and Errors (BELIV), 2008-2014
- EuroVis Workshop on Reproducibility, Verification, and Validation in Visualization, 2013
- IEEE VR Workshop on Off-The-Shelf Virtual Reality, 2012

## Invited Talks

| | |
|---|---|
| Sep 15, 2021 | Shandong University (Shandong, China). (Remote Presentation)<br>*Database and AI Systems for Human Data Interaction* |
| Jul 19, 2021 | Peking University Visualization Summar School (Beijing, China). (Remote Presentation)<br>*Guest Lectures on Interactive Machine Learning and Analytic Provenance* |
| Mar 10, 2021 | National Center for Science and Engineering Statistics (NSF) (Alexandria, VA). (Remote Presentation)<br>*Visual Reasoning and Communication: Applying Principles from Psychology to Design* |
| Feb 26, 2021 | Tufts University Advancement Division (Medford, MA). (Remote Presentation)<br>*Visual Analytics: Human+Computer Collaboration for Data Visualization, Exploration, and Analysis* |
| Jan 21, 2021 | @GAMES Seminar (China). (Remote Presentation)<br>*Data Systems for Human Data Interaction* |
| Sep 24, 2020 | Tufts University Human Factors Seminar (Medford, MA).<br>*Human Factors for Interactive Reasoning with Data and Machine Learning* |
| Feb 25, 2020 | Georgia Tech (Atlanta, GA).<br>*Data Systems for Human Data Interaction* |
| Sep 23, 2019 | University of Minnesota (Minneapolis, MN).<br>*Data Systems for Human Data Interaction* |
| Oct 01, 2018 | Dagstuhl (Dagstuhl, Germany). Seminar on Automating Data Science<br>*Tutorial on Visualization for Data Analysis* |
| Aug 22, 2018 | Hong Kong University of Science and Technology (Hong Kong, China).<br>*Human Data Interaction: Data Organization, Computation, and Visualization* |
| May 31, 2018 | DoD Visualization Workshop (Columbia, MD). Workshop Keynote<br>*Human Data Interaction: Data Organization, Computation, and Visualization* |
| Apr 11, 2018 | University of Konstanz (Konstanz, Germany). Keynote at the DBVis Retreat<br>*Visual Analytics as Visualization and Analysis of Models* |
| Jan 24, 2018 | National Academies of Sciences (Washington DC). Learning from the Science of Cognition and Perception for Decision Making: A Workshop<br>*From Vision Science to Data Science: Applying Perception to Problems in Big Data* |
| Jan 08, 2018 | Luxembourg Institute of Science and Technology (Belval, Luxembourg).<br>*Human Data Interaction: Data Organization, Computation, and Visualization* |
| Dec 20, 2017 | University of Ghent (Ghent, Belgium).<br>*Human Data Interaction: Data Organization, Computation, and Visualization* |
| Dec 04, 2017 | Tufts Chemical and Biological Engineering Department (Medford, MA).<br>*Human Data Interaction: Data Organization, Computation, and Visualization* |
| Sep 13, 2017 | Tufts Friedman School of Nutrition (Boston, MA).<br>*Human Data Interaction: Data Organization, Computation, and Visualization* |
| Aug 30, 2017 | University of Colorado (Boulder, CO).<br>*Big Data Visualization: A Human Centric Approach* |
| Apr 3, 2017 | Draper (Cambridge, MA).<br>*Individual Differences in Information Visualization and Visual Analytics* |

Feb 15, 2017 MIT CSAIL (Cambridge, MA). Graphics Seminar Series
*Big Data Visualization: A Human Centric Approach*

Dec 8, 2016 University of Arizona (Tucson, AZ). Human, Data, and Computers (HDC) Lab
*The Need for Interactivity in Visual Analytics*

Dec 6, 2016 Arizona State University (Tempe, AZ).
*The Need for Interactivity in Visual Analytics*

Jun 6, 2016 Pacific Northwest National Lab (Richland, WA). Faculty Summit on Social Media Visual Analytics
*Big Data Visual Analytics: A User Centric Approach*

Mar 9, 2016 Bentley University (Boston, MA).
*Big Data Visual Analytics: A User Centric Approach*

Mar 7, 2016 Kuperberg Lab (Tufts University, Psychology Department) (Medford, MA).
*Human-Subject Studies in Visualization: Data, Perception, and Cognition*

Feb 29, 2016 King Abdullah University of Science & Technology (KAUST) (Jeddah, Saudi Arabia).
*Big Data Visual Analytics: A User Centric Approach*

Feb 18, 2016 Human Vision and Electronic Imaging (HVEI) Conference (San Francisco, CA).
*From Vision Science to Data Science: Applying Perception to Problems in Big Data*

Jan 14, 2016 Tufts School of Engineering (Medford, MA).
*Data Presentation with Visualization*

Jan 12, 2016 Middlesex University (London, England).
*Big Data Visual Analytics: A User Centric Approach*

Jan 6, 2016 University of College London (London, England). Workshop on Theory of Big Data
*Big Data Visual Analytics: A User Centric Approach*

Dec 03, 2015 Tufts Graduate School (Medford, MA).
*Visualizing Data in Scientific Presentation*

Nov 25, 2015 Dagstuhl (Dagstuhl, Germany). Evaluation in the Crowd: Crowdsourcing and Human-Centred Experiments
*Crowdsourcing Experiments in Visualization: Data, Perception, and Cognition*

Oct 19, 2015 UMass Amherst (Amherst, MA).
*Big Data Visual Analytics: A User Centric Approach*

Oct 16, 2015 Baylor University (Waco, TX).
*Big Data Visual Analytics: A User Centric Approach*

Oct 08, 2015 Brown University (Providence, RI).
*Big Data Visual Analytics: A User Centric Approach*

Sep 17, 2015 Tufts University (Medford, MA). CS Colloquium
*Big Data Visual Analytics: A User Centric Approach*

Feb 26, 2015 Fields Institute (University of Toronto) (Toronto, Canada). Workshop on Visualization for Big Data: Strategies and Principles
*Big Data Visual Analytics: A User Centric Approach*

Jan 20, 2015 MIT SEAri (Cambridge, MA). Workshop on on Interactive Model-Centric Systems Engineering
*Big Data Visual Analytics: A User Centric Approach*

Oct 10, 2014 Worcester Polytechnic Institute (WPI) (Worcester, MA).
*Big Data Visual Analytics: A User Centric Approach*

Sep 29, 2014 IBM Research (Cambridge, MA).
*Visualization and Visual Analytics Research at Tufts University*

Sep 25, 2014 Tufts University (Medford MA). Guest Lecture in COMP 150-02 Big Data (Prof Anselm Blumer)
*Interactive Visualization and Exploration of Remote Large Data Sources*

Aug 08, 2014 MIT SEAri (Cambridge, MA).
*Debugging and Hacking the User in Visual Analytics*

Jul 03, 2014 Sandia National Lab (Albuquerque, NM).
*Analyzing User Interactions for Data and User Modeling*

Jul 02, 2014 Los Alamos National Lab (Los Alamos, NM).
*Analyzing User Interactions for Data and User Modeling*

Jun 16, 2014 Pacific Northwest National Lab (Richland, WA).
*Analyzing User Interactions for Data and User Modeling*

Jun 05, 2014 Dagstuhl (Dagstuhl, Germany). Scientific Visualization
*Analyzing User Interactions for Data and User Modeling*

May 06, 2014 Tufts CTSI (Boston MA).
*Improving Health Risk Communication: Designing Visualizations for Spatial Ability*

May 02, 2014 Tufts Research Day (Medford MA).
*Big Data Visual Analytics: A User Centric Approach*

Mar 11, 2014 Tufts University (Medford MA). Guest Lecture in Psych 245 Representation and Use of Knowledge (Prof Holly Taylor)
*Knowledge Representation using Information Visualization*

Feb 19, 2014 MIT Lincoln Lab (Lexington, MA).
*Debugging and Hacking the User in Visual Analytics*

Feb 06, 2014 Tufts University (Medford, MA).
*Debugging and Hacking the User in Visual Analytics*

Jan 08, 2014 Dagstuhl (Dagstuhl, Germany). Connecting Performance Analysis and Visualization to Advance Extreme Scale Computing
*Debugging and Hacking the User*

Aug 07, 2013 Joint Statistical Meetings (Montreal, Canada). Panel on User Interaction and Feedback
*Interactive Data Analysis and Model Exploration: A Visual Analytics Approach*

Jul 30, 2013 Purdue University VACCINE Center (Jackson, MS). MSI Summer Faculty Training at Jackson State University
*Developing a Visualization and Visual Analytics Curriculum*

Mar 15, 2013 UNC Charlotte (Charlotte, NC). Distinguished CCI Alumni Speaker Series
*How to Succeed Beyond UNC Charlotte*

Dec 14, 2012 Virginia Tech (Blacksburg, VA).
*Big Data Visual Analytics: Challenges and Opportunities*

Nov 16, 2012 New York University Polytechnic Institute (NYU-Poly) (New York, NY).
*Big Data Visual Analytics: Challenges and Opportunities*

Nov 01, 2012 Tufts University (Somerville, MA). 196 Colloquium Series
*Big Data Visual Analytics: Challenges and Opportunities*

Oct 26, 2012 Brown University (Providence, RI).
*Big Data Visual Analytics: Challenges and Opportunities*

Aug 28, 2012 MIT Lincoln Lab (Lexington, MA).
*User-Centric Visual Analytics*

Jul 23, 2012 National Socio-Environmental Synthesis Center (Annapolis, MD).
*User-Centric Visual Analytics*

Jun 12, 2012 IBM Research (Cambridge, MA).
*User-Centric Visual Analytics*

Apr 05, 2012 MIT Humans and Automation Lab (HAL) (Cambridge, MA).
*User-Centric Visual Analytics*

Mar 16, 2012 MIT CSAIL (Cambridge, MA). HCI Seminar Series
*User-Centric Visual Analytics*

Mar 15, 2012 Wentworth Institute of Technology (Boston, MA).
*User-Centric Visual Analytics*

Mar 01, 2012 Aptima (Woburn, MA).
*User-Centric Visual Analytics*

Feb 01, 2012 Tufts University (Medford, MA). SIAM Student Chapter Luncheon Seminar
*User-Centric Visual Analytics*

Aug 03, 2011 University of Massachusetts Lowell (Lowell, MA).
*User-Centric Visual Analytics*

Apr 29, 2011 Fidelity Center for Applied Technology (Boston, MA).
*Visual Analytics Research at Tufts*

Dec 17, 2010 University of Cologne (Cologne, Germany). Conference on Society and the Environment: Integrating 4000 Years of Linguistic Data with the Archaeological Record
*Visualization and Analysis of Text*

May 28, 2010 Lustick Consulting (Philadelphia, PA).
*Visual Analytics: Visual Exploration, Analysis, and Presentation of Large Complex Data*

Mar 17, 2010 Charles River Analytics (Cambridge, MA).
*Data Exploration, Analysis and Representation: Integration Through Visual Analytics*

Mar 16, 2010 Tufts University (Medford, MA).
*Data Exploration, Analysis and Representation: Integration Through Visual Analytics*

Mar 10, 2010 Pacific Northwest National Lab (Richland, WA).
*Data Exploration, Analysis and Representation: Integration Through Visual Analytics*

Feb 25, 2010 University of Georgia (Athens, GA). AI Institute
*Thinking Interactively with Visualization*

Jan 21, 2010 UNC Charlotte (Charlotte, NC). Charlotte Visualization Center Seminar
*UrbanVis Research Group: Urban Analytics*

Sep 30, 2009 University of Kentucky (Lexington, KY). Department of Surgery
*Preventing Sepsis: Artificial Intelligence, Knowledge Discovery, and Visualization*

Aug 19, 2009 National Visual Analytic Consortium (Richland, WA).
*What Are Your Interactions Doing For Your Visualization?*

Jul 30, 2009 Microsoft Research (Redmond, WA).
*Thinking Interactively with Visualization*

Jul 28, 2009 Pacific Northwest National Lab (Richland, WA).
*Thinking Interactively with Visualization*

May 29, 2009 University of Victoria (Victoria, Canada).
*Thinking Interactively with Visualization*

Apr 27, 2009 University of Kentucky (Lexington, KY).
*Thinking Interactively with Visualization*

Mar 19, 2009 DHS University Summit (Washington DC).
*Panel: Visual Analytics and Discrete Science Integration into the DHS Center of Excellence Program*

Mar 19, 2009 DHS University Summit (Washington DC).
*Panel: Research to Reality*

Aug 27, 2008 DoD/DHS Symposium for Overcoming the Information Challenge in Federated Analysis: From Concept to Practice (Washington DC).
*Roadmap of Visualization*

May 14, 2008 Charlotte Metropolitan GIS User Group (Charlotte, NC).
*Multi-Focused Geospatial Analysis Using Probes*

Jan 25, 2008 DoD/DHS Social Science Modeling and Information Visualization Symposium (Washington DC).
*Social Science and Information Visualization on Terrorism and Multimedia*

Nov 29, 2007 UNC Charlotte (Charlotte, NC). Charlotte Visualization Center Seminar
*Integrated Visual Analysis of the Global Terrorism Database*

Nov 19, 2007 University of Maryland (College Park, MD). START Center
*Integrated Visual Analysis of the Global Terrorism Database*

Oct 17, 2007 Charlotte Metropolitan GIS Users Group (Huntersville, NC).
*GIS and Urban Visualization*

Oct 4, 2007 UNC Charlotte (Charlotte, NC). Charlotte Visualization Center Seminar
*Urban Visualization*

Jul 6, 2007 Naval Research Lab (Washington DC).
*Urban Visualization*

Dec 13, 2006 Google (Mountain View, CA). Google Tech Talk
*Simplification of Urban Models based on Urban Legibility*

## Current Advisees

PhD **Ashley Suh**. Department of Computer Science.
(Class of 2018)

**Gabriel Appleby**. Department of Computer Science.
(Class of 2018)

**Brian Montambault**. Department of Computer Science.
(Class of 2020)

**Camelia Brumar**. Department of Computer Science.
(Class of 2020)

**Assaf Benchetrit**. Interdisciplinary Studies (Dance and Computer Science).
(Class of 2021)

## Previous Students - Thesis Advisor

PhD **Ab Mosca**. Tufts University. Department of Computer Science. 2021
Thesis: *"Communicating with Visualization: This Importance of Simplicity"*
Committee: Rob Jacob, Megan Monroe, Norbert Wilson, Kristi Potter, Alvitta Ottley
after graduation: Assistant Teaching Professor, Northeastern University

**Marianne Procopio**. Tufts University. Department of Computer Science. 2020
Thesis: *"Progressive Visualization for Big Data Exploratory Analysis"*
Committee: Rob Jacob, Carlos Scheidegger, Eugene Wu, Daniel Hannon
after graduation: Technical Staff, MIT Lincoln Lab

**Dylan Cashman**. Tufts University. Department of Computer Science. 2020
Thesis: *"Bridging the Human-Machine Gap in Applied Machine Learning with Visual Analytics"*
Committee: Rob Jacob, Michael Gleicher, Michael Hughes, Xiaozhe Hu
after graduation: Senior Expert Data Scientist, Novartis

**Alvitta Ottley**. Tufts University. Department of Computer Science. 2016
Thesis: *"Toward Personalized Adaptive Visualizations"*
Committee: Rob Jacob, Holly Taylor, Sam Guyer, Cristina Conati
after graduation: Assistant Professor at Washington University in Saint Louis

**Eli Brown**. Tufts University. Department of Computer Science. 2015
Thesis: *"Learning from Users' Interactions with Visual Analytics Systems"*
Committee: Rob Jacob, Gregory Crane, Misha Kilmer, Chris North
after graduation: Assistant Professor at DePaul University

**Jordan Crouser**. Tufts University. Department of Computer Science. 2013
Thesis: *"Toward Theoretical Measures for Systems Involving Human Computation"*
Committee: Rob Jacob, Ben Hescott, Mary Glaser, Matthew Schmidt
**IEEE VGTC PhD Dissertation Award Honorable Mention**
after graduation: MIT Lincoln Lab
currently: Assistant Professor at Smith College

Co-Advised PhD

**Wenbo Tao**. MIT. CSAIL. 2020
(Primary Advisor: Mike Stonebraker)
after graduation: Facebook

**Leilani Battle**. MIT. CSAIL. 2017
Primary Advisor: Mike Stonebraker
after graduation: Assistant Professor at the University of Maryland

**Michael Curry**. MIT. Department of Aeronautics and Astronautics. 2017
Primary Advisor: Daniel Hastings
after graduation: Draper

**Beste Yuksel**. Tufts University. Department of Computer Science. 2016
Primary Advisor: Rob Jacob
after graduation: Assistant Professor at the University of San Francisco

**Dan Afergan**. Tufts University. Department of Computer Science. 2014
Primary Advisor: Rob Jacob
after graduation: Google

**Evan Peck**. Tufts University. Department of Computer Science. 2014
Primary Advisor: Rob Jacob
after graduation: Assistant Professor at Bucknell

Post-Doc

**Michael Behrisch**. Tufts University. Department of Computer Science. 2019-2019
PhD from University of Konstanz in 2017
after post-doc: Assistant Professor at the University of Utrecht (Netherlands)

**Shah Rukh Humayoun**. Tufts University. Department of Computer Science. 2017-2019
PhD from Sapienza University of Rome , 2011
after post-doc: Assistant Professor at the San Francisco State University

**Lane Harrison**. Tufts University. Department of Computer Science. 2013-2015
PhD from UNC Charlotte, 2013
after post-doc: Assistant Professor at WPI

Master's

**Rui Chen**. Tufts University. Department of Computer Science. 2021
after graduation: Machine Learning Engineer at Avalara

**Shannon Robinson**. Tufts University. Department of Computer Science. 2020
after graduation: Software Engineer at EditShare

**Brian Montambault**. Tufts University. Department of Computer Science. 2020
after graduation: PhD student at Tufts

**Kenny Alperin**. Tufts University. Department of Computer Science. 2019
after graduation: MIT Lincoln

**Alexandra Clifford**. Tufts University. Department of Computer Science. 2019
after graduation: MIT Lincoln

**Melissa Iori**. Tufts University. Department of Computer Science. 2017
after graduation: Draper Fellow

**Anzu Hakone**. Tufts University. Department of Computer Science. 2017
after graduation: Software Engineering at the Broad Institute

**Erden Oktay**. Tufts University. Department of Computer Science. 2017
after graduation: Programmer Analyst at Tufts Medical School

**Pratham Joshi**. Tufts University. Department of Computer Science. 2017
after graduation: Programmer Analyst at Tufts Medical School

**Filipe Barroso**. Tufts University. Department of Computer Science. 2017
after graduation: Software Engineer at IBM

**Fumeng Yang**. Tufts University. Department of Computer Science. 2016
after graduation: PhD student at Brown University

**Dylan Cashman**. Tufts University. Department of Computer Science. 2016
after graduation: PhD student at Tufts University

**Jared Chandler**. Tufts University. Department of Computer Science. 2016
after graduation: PhD student at Tufts University

**Stephen McDonald**. Tufts University. Department of Computer Science. 2015
after graduation: GIS Fellow at the Center for Geographic Analysis at Harvard

**Guvenc Usanmaz**. Tufts University. Department of Computer Science. 2014
after graduation: Research/Teaching Assistant at the University of Tekirdag (Turkey)

**Jason Jacob**. Tufts University. Department of Computer Science. 2014
after graduation: Draper Labs

**Helen (Jieqiong) Zhao**. Tufts University. Department of Computer Science. 2013
after graduation: PhD student at Purdue University

**Orkun Ozbek**. Tufts University. Department of Computer Science. 2013
after graduation: Software Engineer at TripAdvisor

**Samuel (Shaomeng) Li**. Tufts University. Department of Computer Science. 2012
after graduation: PhD student at University of Oregon

**Jeremy Freeman**. Tufts University. Department of Computer Science. 2011
after graduation: Java Engineer at Zoom Information

**Michael Degatano**. Tufts University. Department of Computer Science. 2011
after graduation: Software Engineer at Pegasystems

**Daniel Kee**. Tufts University. Department of Computer Science. 2011
after graduation: Software Engineer at iRobot

Senior Thesis

**Daniel Kass**. Tufts University. Department of Computer Science and Communications and Media Studies. (co-advisor: James Ennis). 2013
after graduation: Developer, Technology Lead at Layerframe

**Connor Gramazio**. Tufts University. Department of Computer Science. 2012
after graduation: PhD student at Brown University

Senior Project

**Shana Friedman**. Tufts University. Department of Computer Science and Communications and Media Studies. (co-advisor: Howard Woolf). 2015
after graduation: Apple

**Liz Salowitz**. Tufts University. Department of Computer Science. 2013
after graduation: Project Manager at Microsoft

Post-Bac

**Jared Chandler**. Tufts University. Department of Computer Science. 2014
after graduation: Master's student at Tufts

**Shannon Robinson**. Tufts University. Department of Computer Science.
after graduation: PhD student at Tufts

## Previous Students - Committee Member

PhD Thesis Committee (External)

**Roger Almeida Leite**. TU Wien (Vienna Univerity of Technology, Austria). 2021
Thesis Advisor: Silvia Miksch
after graduation: Tricentis

**Subhajit Das**. Georgia Tech. School of Interactive Computing. 2021
Thesis Advisor: Alex Endert
after graduation: Amazon

**Bo Kang**. Ghent University (Belgium). 2019
Thesis Advisors: Tijl De Bie and Jefrey Lijffijt
after graduation: Postdoc at Ghent

**Dereck J Toker**. University of British Columbia (UBC). 2019
Thesis Advisor: Cristina Conati
after graduation: TBD

**Zhe Wang**. University of Arizona. 2019
Thesis Advisor: Carlos Scheidegger
after graduation: ASML

**Rafael Veras Guimarães**. University of Ontario Institute of Technology. 2019
Thesis Advisor: Christopher Collins
after graduation: Huawei Technologies

**Qing Chen**. Hong Kong University of Science and Technology. 2018
Thesis Advisor: Huamin Qu
after graduation: Postdoc at INRIA
currently: Assistant Professor at Tongji University (China)

**Jessica Zeitz Self**. Virginia Tech. Department of Computer Science. 2016
Thesis Advisor: Chris North
after graduation: Assistant Professor at Mary Washington University

**Steven Gomez**. Brown University. Department of Computer Science. 2015
Thesis Advisor: David Laidlaw
after graduation: MIT Lincoln Lab

PhD Thesis Committee (Tufts)

**Sam Hincks**. Tufts University. Department of Computer Science. 2019
Thesis Advisor: Rob Jacob
after graduation: TBD

**Sara Amin**. Tufts University. Department of Computer Science. 2019
Thesis Advisor: Soha Hassoun
after graduation: Walmart

**Michael Shah**. Tufts University. Department of Computer Science. 2017
Thesis Advisor: Sam Guyer
after graduation: Lecturer at Northeastern University

**Robert D'Angelo**. Tufts University. Department of Electrical and Computer Engineering. 2017
Thesis Advisor: Sameer Sonkusale
after graduation: Draper

**Gordon Briggs**. Tufts University. Department of Computer Science. 2015
Thesis Advisor: Matthias Scheutz
after graduation: Naval Research Lab

**Jingjing Liu**. Tufts University. Department of Computer Science. 2014
Thesis Advisor: Carla Brodley
after graduation: Software Engineer at ZenMarketing
currently: Google

**Amelio Vazquez-Reina**. Tufts University. Department of Computer Science. 2012
Thesis Advisor: Eric Miller
after graduation: BBN / Raytheon

**James Won**. Tufts University. Department of Mechanical Engineering. 2012
Thesis Advisor: Daniel Hannon
after graduation: MIT Lincoln Lab

**Erin Solovey**. Tufts University. Department of Computer Science. 2011
Thesis Advisor: Robert Jacob
after graduation: NSF CI-Fellow at MIT with Missy Cummings
currently: Assistant Professor at Drexel

PhD Thesis Committee (Charlotte)

**Thomas Butkiewicz**. UNC Charlotte. Department of Computer Science. 2010
Thesis Advisor: Zachary Wartell
after graduation: Research Assistant Professor at the University of New Hampshire

Master's Thesis Committee

**Quinn Pham**. Tufts University. Dept of Psychology. 2021
Thesis Advisor: Paul Muentener
after graduation: TBD

**Peter Taylor-Brown**. Tufts University. Dept of Mechanical Engineering. 2013
Thesis Advisor: Robert Hannemann
after graduation: Technical Design Lead at Layerframe

**Ginette Wessel**. UNC Charlotte. Department of Architecture. 2009
Thesis Advisor: Eric Sauda
after graduation: PhD student at UC Berkeley

Senior Thesis Committee

**Andrew (AJ) Jenkins**. Tufts University. Department of Computer Science. 2014
Thesis Advisor: Rob Jacob
after graduation: Software Engineer at Kyruus

## Undergraduate Research

2020 **Kate Hanson, Helen Li, Andrew X. Wang, Anna Yuen, Zeyu Chang** (Tufts)
VALT Undergraduate Research

**Jesus Garcia, Quinn Pham** (Tufts)
NSF TRIPODS DIAMONDS Scholar Program

**Tony Goss, Kate Hansen, Helen Li** (Tufts)
VALT Summer Research

2019 **Sammy Stolzenbach, Kate Hanson, William Zhang, Si Chen** (Tufts)
VALT Summer Research

2018 **William Zhang, Si Chen, Leah Stern, Charlie Caron** (Tufts)
VALT Summer Research

2017 **Julia Romero** (Texas Austin)
NSF REU

**Meredith Clarke, Rebecca Redelmeier** (Tufts), **Alan Luo** (Choate Rosemary Hall High School)
VALT Summer Research

**Tal August** (Tufts)
VALT Undergraduate Research

2016 **Johnny Lau**, **Peter Lee** (Tufts)
VALT Summer Research

**Kabir Singh**, **Tal August** (Tufts)
VALT Undergraduate Research

2015 **Anzu Hakone**, **Nathan Winters** (Tufts)
VALT Undergraduate Research

**Jamal Thorne** (Morehouse College)
Leadership Alliance Program

2014 **Simon Warchol**, **Philippe Mamann**, **Robert Ruenes**, **Karthic Aragam** (Tufts)
VALT Undergraduate Research

2013 **Robert Ruenes**, **Karthic Aragam** (Tufts)
VALT Undergraduate Research

2012 **Blossom Metevier** (University of Maryland Baltimore County)
Summer Research Early Identification Program

**Liz Salowitz**, **Jillian Silver** (Tufts)
VALT Summer Research

2011 **Austin Tucker**, **Jamal Thorne**, **Brockton Starling** (Morehouse College)
Leadership Alliance Program

## Student Awards, Honors, and Research Internships

2021 **Ashley Suh**. Finalist for the 2021 NCWIT Collegiate Award
Internship at Novartis

**Ab Mosca**. Tufts 23rd Annual Graduate Award for SOE Graduate Outstanding Graduate Contributor to Engineering Education

**Yuexing Hao**. Graduate Student Research Competition Award
Internship at Keva Health

**Brian Montambault**. Internship at the SSI Group

**Gabriel Appleby**. Internship at Novartis

**Rui Chen**. Internship at Avalara

**Camelia Brumar**. Internship at Alife Health

2020 **Ab Mosca**. Internship at In-Q-Tel

**Camelia Brumar**. Third place in the International Major League Hacking Hackathon

2018 **Dylan Cashman**. Internship at IBM Research

**Ab Mosca**. Internship at National Renewable Energy Lab

**Shannon Robinson**. Internship at MIT Lincoln Lab

**Ashley Suh**. Loevner Fellowship (Tufts)

2017 **Maja Milosavljevic**. Google Lime Fellowship

2016 **Melissa Iori**. Draper Fellow

**Maja Milosavljevic**. NSA Mathematics and Computer Science Student Scholarship
Honorable Mention, NSF Graduate Research Fellowship

**Marianne Procopio**. MIT Lincoln Scholars Fellowship

**Dylan Cashman**. Internship at PARC
Provost's Fellowship (Tufts)

**Alvitta Ottley**. Heidelberg Laureate (Heidelberg Laureate Forum Foundation)

2015 **Dylan Cashman**. Internship at MIT Lincoln Lab

2014 **Alvitta Ottley**. Kirk and Janelle Loevner Fellowship (Tufts)
Internship at IBM Research (Almaden)

**Jillian Silver**. James Schmolze Prize for Excellence in Computer Science (Tufts)

**Eli Brown**. Internship at Microsoft Research (Redmond)

**Max Goldstein**. Visualizing Research at Tufts Award: Software

2013 **Liz Salowitz**. De Florez Prize in Human Engineering (Tufts)

**Jayme Woogerd**. American Association of University Women Fellowship

**Eli Brown**. Internship at the Pacific Northwest National Lab

**Alvitta Ottley**. Internship at IBM Research (Cambridge)

2012 **Jordan Crouser**. Internship at MIT Lincoln Lab

**Connor Gramazio**. Senior Research Thesis with Highest Honor (Tufts)
NSF Graduate Research Fellowship
Honorable Mention, CRA Undergraduate Research Award
Internship at Google Research Cambridge

**Jillian Silver**. Karno Dean's Award for Academic Excellence and Leadership (Tufts)
NSF Student Travel Award / Grace Hopper Scholarship

**Liz Salowitz**. NSF Student Travel Award / Grace Hopper Scholarship

2011 **Connor Gramazio**. De Florez Prize in Human Engineering (Tufts)

**Jordan Crouser**. Visualizing Research at Tufts Award: Illustrations

## Teaching

Fall 2021 - Human Computer Interaction, CS 171, Tufts University (45 students)
Spring 2021 - Visual Analytics, COMP 152-02, Tufts University (35 students)
Fall 2020 - Visualization Seminar, COMP 250-02, Tufts University (13 students)
- PhD Qualifying Exam: Jamie Heller, Leon Wang
Spring 2020 - Computer Graphics, COMP 175, Tufts University (21 students)
Fall 2019 - Visual Analytics, COMP 150-04, Tufts University (35 students)
Spring 2019 - Computer Graphics, COMP 175, Tufts University (20 students)
- PhD Qualifying Exam: Ab Mosca
Fall 2018 - Directed Studies: Ashley Suh
Spring 2018 - Computer Graphics, COMP 175, Tufts University (25 students)
- Directed Studies: Ab Mosca, Shannon Robinson
Fall 2017 - Visualization, COMP 177, Tufts University (40 students)
- PhD Qualifying Exam: Dylan Cashman
Spring 2017 - Directed Studies: Kabir Singh, Tara Kola, Ab Mosca
- PhD Qualifying Exam: Marianne Procopio
Fall 2016 - Directed Studies: Anzu Hakone
Spring 2016 - Computer Graphics, COMP 175, Tufts University (25 students)
- Visualization Seminar, COMP 250-VIS, Tufts University (13 students)
- Directed Studies: Soubhik Barari
Fall 2015 - Visualization, COMP 150-02, Tufts University (33 students)
- PhD Qualifying Exam: Sam Hincks, Hugo Alves Akitaya
Spring 2015 - Computer Graphics, COMP 175, Tufts University (15 students)
- Visualization Seminar, COMP 250-VIS, Tufts University (6 students)
- Directed Studies: Anzu Hakone, Jaime Sanchez
- Senior Capstone Supervisor: Hyung-seo Park, Allison Tai
- PhD Qualifying Exam: Fumeng Yang, Tomoki Shibata, Rishit Sheth
Fall 2014 - Visualization, COMP 150-07, Tufts University (61 students)
- Senior Capstone Supervisor: Hyung-seo Park, Allison Tai
- Directed Studies: Fumeng Yang
- Internship (CPT) Supervision: Hyung-seo Park (Microsoft)
Summer 2014 - Internship (CPT) Supervision: Stefan Dimitrov (Microsoft), Hyung-seo Park (Microsoft), Ray Xiao (TripAdvisor)
Spring 2014 - Computer Graphics, COMP 175, Tufts University (21 students)
Fall 2013 - Directed Studies: Guvenc Usanmaz
- Internship (CPT) Supervision: Hyung-seo Park (Google)
- PhD Qualifying Exam: Beste Yuksel
Summer 2013 - Directed Studies: Jason Jacob
- Internship (CPT) Supervision: Hyung-seo Park (Athena Health)
Spring 2013 - Visualization, COMP 150-02, Tufts University (44 students)
- Directed Studies: Liz Salowitz
Fall 2012 - Visual Analytics and Provenance, COMP 250-02, Tufts University (12 students)
- Directed Studies: Dan Kass
- PhD Qualifying Exam: Eli Brown, Alvitta Ottley, Megan Strait
Spring 2012 - Introduction to Computer Science, COMP 11, Tufts University (118 students)
- Directed Studies: Orkun Ozbek
Fall 2011 - Computer Graphics, COMP 175, Tufts University (13 students)
- Directed Studies: Eli Brown
- PhD Qualifying Exam: Dan Afergan
Spring 2011 - Visualization, COMP 150-07, Tufts University (18 students)
- Directed Studies: Jeremy Freeman, Connor Gramazio, Garth Griffin, Samuel Li

Fall 2010 - Topics in Visual Analytics, COMP 150-12, Tufts University (10 students)

Summer 1999 - Instructor for Intro to Computer Science, Center for Talented Youth (CTY) at Stanford University

1994-96 - (Head) Teaching Assistant for Programming in C, Programming in Pascal, and Intro to Computer Literacy, Johns Hopkins University

## University Services

Tufts University
- School of Engineering Graduate School Council (2021-present)
- Tufts Faculty Senate (2019-present)
- Tufts Faculty Senate Committee on University Budget (2021-present)
- Tufts Faculty Senate Committee on Research and Scholarship (2019-2021)
- School of Engineering Academic Standing Committee (2015-2019)
- School of Engineering Internal Transfer Committee (2015-2017)
- Reviewer for the ExCollege (2016-18)
- Tufts University Equal Educational Opportunity Committee (2011-16)
- Mechanical Engineering (Human Factors) Faculty Search Committee (2014-15)
- Lecture for the Admissions Office Voices of Tufts Program (2014)
- Tufts Research Visualization Committee (2014)
- School of Engineering Open House Faculty Panel (2012-2013)

Tufts Computer Science
- Diversity Committee (2019-present), Chair (2021-present)
- Graduate Committee (2018-present)
- PhD Admissions Committee (2020-present)
- Faculty Mentoring (2017-18, 2020-present)
- Faculty and Graduate Students Award Nomination (2019-present)
- Faculty Search Committee for Human Data Interactions (2019-20)
- Faculty Search Committee Chair for Data Systems (2017-19)
- Lecturer Search Committee Chair (2017-19)
- Professor of the Practice Search (Committee Chair) (2015-16)
- Faculty Search Committee for Machine Learning (2016)
- Graduate Student Orientation Organizer (2014-16)
- Lecturer Search Committee (2015)
- Colloquium Chair (2011-15)
- Graduate Admission's Committee (2010-2015)
- Lecturer Search Committee (2012-13)
- Open House Committee (2011-12)

Tufts Student
- Faculty Supervisor for the student-run electronic magazine *Enigma : Tufts Journal of Data & Computing* (2014-2015)
  Student Lead: Soubhik Barari
- Faculty Supervisor for the student-run *Tufts Data Science Club* (2014-2015)
  Student Lead: Gideon Wulfsohn
- Judge for student-run Hackathon *IDHack* (2015)
  Student Lead: Sam Purcell

UNC Charlotte
- College of Computing and Informatics Research Strategic Planning Committee (2009)
- College of Computing and Informatics Dean Search Committee (2008)

## Professional Memberships

Computing
- IEEE Computer Society
- ACM (Association for Computing Machinery)

Honor
- Sigma Xi, The Scientific Research Society
- Phi Kappa Phi Honor Society

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