

# Remco Chang

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## Academic Degrees

- Expected  
December 2009 **PhD in Computer Science**, *University of North Carolina Charlotte*, Charlotte, NC.  
Thesis: "Thinking Interactively with Visualization"  
Advisor: William Ribarsky
- May 2000 **M.Sc. in Computer Science**, *Brown University*, Providence, RI.  
Thesis: "Simulation Techniques for Deformable Animated Characters"  
Advisor: Nancy Pollard
- December 1997 **B.A. in Engineering**, *Johns Hopkins University*, Baltimore, MD.  
Major: Computer Science
- December 1997 **B.A. in Arts and Science**, *Johns Hopkins University*, Baltimore, MD.  
Major: Economics

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## Professional Appointments

- 1/05 – current **Research Scientist**, *University of North Carolina at Charlotte*, Charlotte, NC.
- 10/03 – 1/05 **Senior Developer**, *Vethorizons LLC*, Charlotte, NC.
- 10/02 – 10/03 **Senior Software Engineer**, *Boeing Corp/Preston Aviation LCC*, Fairfax, VA.
- 06/00 – 04/01 **Technology Lead**, *BountyQuest Corp*, Boston, MA.

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## Publications

### *Journal Papers / Book Chapters*

- [1] William Pike, John Stasko, Remco Chang, and Theresa O'Connell. Science of interaction. *Information Visualization*, 8:263–274, 2009.
- [2] Daniel Keefe, Marcus Ewert, William Ribarsky, and Remco Chang. Interactive coordinated multiple-view visualization of biomechanical motion data. *Visualization and Computer Graphics, IEEE Transactions on (IEEE Visualization Conference)*, 15(6):1383–1390, 2009.
- [3] 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*, July 2009. [Online].
- [4] Dong Hyun Jeong, Caroline Ziemkiewicz, Brian Fisher, William Ribarsky, and Remco Chang. ipca: An interactive system for pca-based visual analytics. *Computer Graphics Forum (IEEE Eurovis Conference)*, 28(3):767–774, 2009.
- [5] 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.
- [6] 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.
- [7] Thomas Butkiewicz, Wenwen Dou, Zachary Wartell, William Ribarsky, and Remco Chang. Multi-focused geospatial analysis using probes. *Visualization and Computer Graphics, IEEE Transactions on (IEEE InfoVis Conference)*, 14(6):1165–1172, Nov.-Dec. 2008.

- [8] 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.
- [9] 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.
- [10] 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.
- [11] 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.
- [12] Thomas Butkiewicz, Remco Chang, Zachary Wartell, and William Ribarsky. Visual analysis of urban change. *Computer Graphics Forum (IEEE Eurovis Conference)*, 27(3):903–910, 2008.
- [13] Thomas Butkiewicz, Remco Chang, William Ribarsky, and Zachary Wartell. *Understanding Dynamics of Geographic Domains*, chapter Visual Analysis of Urban Terrain Dynamics, pages 151–169. CRC Press/Taylor and Francis, 2007.
- [14] Remco Chang, Ginette Wessel, Robert Kosara, Eric Sauda, and William Ribarsky. Legible cities: Focus-dependent multi-resolution visualization of urban relationships. *Visualization and Computer Graphics, IEEE Transactions on (IEEE InfoVis Conference)*, 13(6):1169–1175, Nov.-Dec. 2007.

#### Conference / Workshop Papers

- [15] 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.
- [16] Dong Hyun Jeong, William Ribarsky, and Remco Chang. Designing a pca-based collaborative visual analytics system. In *IEEE Visualization Workshop on Collaborative Visualization*, 2009.
- [17] 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*, 2009.
- [18] 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.
- [19] 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.
- [20] Michael Butkiewicz, Thomas Butkiewicz, William Ribarsky, and Remco Chang. Integrating time-series visualizations within parallel coordinates for exploratory analysis of incident databases. In *SPIE Defense, Security and Sensing*, pages 7346–11, 2009.
- [21] Thomas Butkiewicz, Dong Hyun Jeong, William Ribarsky, and Remco Chang. Hierarchical multi-touch selection techniques for collaborative geospatial analysis. In *SPIE Defense, Security and Sensing*, pages 7346–12, 2009.
- [22] Dong Hyun Jeong, Remco Chang, and William Ribarsky. An alternative definition and model for knowledge visualization. In *IEEE Visualization Workshop on Knowledge Assisted Visualization*, 2008.
- [23] Xiaoyu Wang, Wenwen Dou, Seok won Lee, William Ribarsky, and Remco Chang. Integrating visual analysis with ontological knowledge structure. In *IEEE Visualization Workshop on Knowledge Assisted Visualization*, 2008.
- [24] 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 *Visual Analytics Science and Technology, 2008. VAST 2008. IEEE Symposium on*, pages 83–90, 2008.

- [25] Ginette Wessel, Remco Chang, and Eric Sauda. Towards a new (mapping of the) city: Interactive, data rich modes of urban legibility. In *Association for Computer Aided Design in Architecture*, pages 416–421, 2008.
- [26] Ginette Wessel, Remco Chang, and Eric Sauda. Visualizing gis: Urban form and data structure. In Dietmar Froehlich and Michaela 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.
- [27] Ginette Wessel, Eric Sauda, and Remco Chang. Urban visualization: Urban design and computer visualization. In *CAADRIA 2008 Proceedings of the 13th International Conference on Computer Aided Architectural Design Research in Asia*, pages 409–416, Chiang Mai, Thailand, April 9-12 2008.
- [28] Thomas Butkiewicz, Remco Chang, Zachary Wartell, and William Ribarsky. Visual analysis for live lidar battlefield change detection. volume 6983, page 69830B. SPIE, 2008.
- [29] Josh Jones, Remco Chang, Thomas Butkiewicz, and William Ribarsky. Visualizing uncertainty for geographical information in the global terrorism database. volume 6983, page 69830E. SPIE, 2008.
- [30] Alex Godwin, Remco Chang, Robert Kosara, and William Ribarsky. Visual analysis of entity relationships in the global terrorism database. volume 6983, page 69830G. SPIE, 2008.
- [31] Thomas Butkiewicz, Remco Chang, Zachary Wartell, and William Ribarsky. Analyzing sampled terrain volumetrically with regard to error and geologic variation. volume 6495, page 64950O. SPIE, 2007.
- [32] 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 *Visual Analytics Science and Technology, 2007. VAST 2007. IEEE Symposium on*, pages 155–162, 30 2007-Nov. 1 2007.
- [33] 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.

### Miscellaneous

- [34] 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, 2009.
- [35] Dong Hyun Jeong, William Ribarsky, and Remco Chang. Creating a knowledge structure in real-time. Poster, IEEE Symposium on Visualization (Eurovis), 2009.
- [36] 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.
- [37] Ginette Wessel, Eric Sauda, and Remco Chang. Mapping understanding: Transforming topographic maps into cognitive maps. GeoVis Hamburg Workshop, 2009.
- [38] William Ribarsky, Edd Hauser, Shen en Chen, Bill Tolone, Seok won Lee, Remco Chang, Wanqiu Liu, Rashna Vatcha, and Xiaoyu Wang. Integrated remote sensing and visualization (irsv) system for transportation infrastructure operations and management. 88th Transportation Research Board, 2009.
- [39] Alex Godwin, Remco Chang, Robert Kosara, and William Ribarsky. Visual data mining of unevenly-spaced event sequences. Interactive Poster, IEEE Symposium on Visual Analytics, 2008.
- [40] Ginette Wessel, Remco Chang, and Eric Sauda. User-centric mapping. Siggraph 2008 Late Breaking Work, August 2008.
- [41] 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.
- [42] Remco Chang. Simulation techniques for deformable animated characters. Master’s thesis, Brown University, May 2000.

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## Grants

- PI* • NSF/DoD SES: NSCC: Collaborative Research: Terror, Conflict Processes, Organizations, & Ideologies: Completing the Picture (Funded by DoD as part of the Minerva Initiative). \$100,000. 2009-2011 (2 years).
- co-PI* • NSF SciSIP: A Visual Analytics Approach to Science and Innovation Policy. PI: William Ribarsky, Co-PIs: Jim Thomas, Remco Chang, Jing Yang. \$746,567. 2009-2012 (3 years).
- DHS International Program: Deriving and Applying Cognitive Principles for Human/Computer Approaches to Complex Analytical Problems. PI: William Ribarsky, Co-PIs: Brian Fisher, Remco Chang, John Dill. \$200,000. 2009-2010 (1 year).

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## Professional Activities

- Journal Reviewer* • IEEE Computer Graphics and Applications (CG&A)
- IEEE Transactions on Computer Graphics and Visualization (TVCG)
- IEEE Conf. on Information Visualization
- IEEE Conf. on Visualization
- Computer Graphics Forum (Wiley)
- Environment and Urban Systems (Elsevier)
- International Journal of Geographical Information Science (Taylor & Francis)
- Conf Reviewer* • IEEE Symposium on Visual Analytics
- Computer Graphics International Conference
- IEEE-VGTC Symposium on Visualization
- CHI Workshop on Beyond Time and Errors
- ACM SIGGRAPH Asia
- ACM SIGCHI
- Memberships* • IEEE Computer Society
- ACM (Association for Computing Machinery)
- Sigma Xi, The Scientific Research Society
- Phi Kappa Phi Honor Society
- Committee* • AAAI Spring-09 Symposium on Technosocial Predictive Analytics (2009)
- Panelist* • 3rd Annual DHS University Summit. Panel: Research to Reality (2009)
- 3rd Annual DHS University Summit. Panel: Visual Analytics and Discrete Science Integration into the DHS Center of Excellence Program (2009)
- National Visual Analytics Consortium. Panel: High-Priority Research Directions for Visual Analytics (2009)
- Service* • UNC Charlotte CCI Dean Search Committee (2008)
- UNC Charlotte CCI Research Strategic Planning Committee (2009)

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## Invited Talks

- Dec 13, 2006 Google Inc. *Simplification of Urban Models based on Urban Legibility*
- Jul 6, 2007 Naval Research Lab. *Urban Visualization*
- Oct 4, 2007 Charlotte Viscenter. *Urban Visualization*
- Oct 17, 2007 Charlotte Metropolitan GIS Users Group. *GIS and Urban Visualization*
- Nov 19, 2007 START Center at University of Maryland. *Integrated Visual Analysis of the Global Terrorism Database*
- Nov 29, 2007 Charlotte Viscenter. *Integrated Visual Analysis of the Global Terrorism Database*

- Jan 25, 2008 DoD/DHS Social Science Modeling and Information Visualization Symposium. *Social Science and Information Visualization on Terrorism and Multimedia*
- May 14, 2008 Charlotte Metropolitan GIS User Group. *Multi-Focused Geospatial Analysis Using Probes*
- Aug 27, 2008 DoD/DHS Symposium for Overcoming the Information Challenge in Federated Analysis: From Concept to Practice. *Roadmap of Visualization*
- Mar 19, 2009 DHS University Summit. Panel: Research to Reality
- Mar 19, 2009 DHS University Summit. Panel: Visual Analytics and Discrete Science Integration into the DHS Center of Excellence Program
- Apr 27, 2009 University of Kentucky. *Thinking Interactively with Visualization*
- May 29, 2009 University of Victoria. *Thinking Interactively with Visualization*
- Jul 28, 2009 Pacific Northwest National Lab. *Thinking Interactively with Visualization*
- Jul 30, 2009 Microsoft Research. *Thinking Interactively with Visualization*
- Aug 19, 2009 National Visual Analytic Consortium. *What Are Your Interactions Doing For Your Visualization?*
- Sep 30, 2009 University of Kentucky (Grand Rounds at the Department of Surgery). *Preventing Sepsis: Artificial Intelligence, Knowledge Discovery, and Visualization*

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## Teaching

- Summer 1999 **Instructor**, *Center for Talented Youth (CTY)*, Stanford University.  
Course: Intro to Computer Science
- Summer 1996 **Head Teaching Assistant**, *Dept of Computer Science*, Johns Hopkins University.  
Course: Programming in C
- Fall 1995 **Teaching Assistant**, *Dept of Computer Science*, Johns Hopkins University.  
Course: Programming in Pascal
- Summer 1995 **Head Teaching Assistant**, *Dept of Computer Science*, Johns Hopkins University.  
Course: Programming in Pascal
- Spring 1995 **Teaching Assistant**, *Dept of Computer Science*, Johns Hopkins University.  
Course: Intro to Computer Literacy
- Fall 1994 **Head Teaching Assistant**, *Dept of Computer Science*, Johns Hopkins University.  
Course: Programming in Pascal

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## Other

- Languages English, Chinese (bilingual)
- Citizenship USA