

David H. Gotz, PhD
Research Staff Member
IBM T. J. Watson Research Center
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CURRENT EMPLOYMENT

Research Staff Member
2006 - Present
T. J. Watson Research Center at IBM Research

Research areas of focus:

Medical informatics, visual analytics, information visualization, intelligent user interfaces, multimedia systems, and computer graphics.

Research with impact:

Technical leadership in the design and development of innovative technologies with real-world client impact.

Led multi-disciplinary teams of research staff and software engineers in the development of new techniques leading to scientific publications and patent pending inventions.

Experience developing and evangelizing proposals for research project sponsorship.

Leadership roles in client-facing interactions managing requirements and producing innovative results.

Management of multi-national, multi-division effort spanning research and product development organizations for technology transfer.

Cross-cutting research connecting fields as diverse as data analysis, high-performance computing and system administration, visualization, medical informatics, and natural language processing.

EDUCATION

University of North Carolina at Chapel Hill
Ph.D. in Computer Science, 2005
Dissertation Title: Scalable and Adaptive Streaming for Non-Linear Media
M.S. in Computer Science, 2001

Georgia Institute of Technology
B.S. in Computer Science, 1999, with Highest Honors
Certificate in Economics

RESEARCH AREAS OF INTEREST

Computer Graphics
Computer Networking
Information Visualization
Intelligent User Interfaces
Medical Informatics
Multimedia Computing
Visual Analytics (interactive visual interfaces with data mining and analysis)

PREVIOUS EMPLOYMENT

Post-Doctoral Research Scientist
2005 – 2006
T. J. Watson Research Center at IBM Research, Intelligent Multimedia Interaction Group

Research Assistant
2001 – 2005
UNC-Chapel Hill Computer Science Department, Multimedia Research

Research Intern
Summer 2001
Bell Labs, Multimedia Communications Research Lab

Research Assistant
1999 – 2001
UNC-Chapel Hill Computer Science Department, Office of the Future Group
(Visualization and Computer Graphics Research)

Research Intern
Summer 1999
Naval Research Labs, Virtual Reality Lab

Research Intern
Summer 1998
Bell Labs, Multimedia Communications Research Lab

Undergraduate Research Assistant
1997 – 1999
Georgia Institute of Technology, Virtual Environments Group

Intern

Summers 1995, 1996, 1997

Bell Communications Research

REFEREED CONFERENCE PUBLICATIONS

Nan Cao, David Gotz, Jimeng Sun, Yu-Ru Lin, and Huamin Qu. SolarMap: Multifaceted Visual Analytics for Topic Exploration. *IEEE International Conference on Data Mining (2011)*, Vancouver, Canada (2011).

David Gotz, Jimeng Sun, Nan Cao, and Shahram Ebadollahi. Visual Cluster Analysis in Support of Clinical Decision Intelligence. *American Medical Informatics Association Annual Symposium (2011)*, Washington, DC.

Nan Cao, David Gotz, Jimeng Sun, and Huamin Qu. DICON: Interactive Visual Analysis of Multidimensional Clusters. *IEEE Information Visualization (2011)*, Providence, Rhode Island.

Nan Cao, David Gotz, Jimeng Sun, Yu-Ru Lin, and Huamin Qu. ChronAtlas: A Visualization for Dynamic Topic Exploration. *IEEE Information Visualization Posters (2011)*, Providence, Rhode Island.

Krist Wongsuphasawat and David Gotz. Outflow: Visualizing Patient Flow by Symptoms and Outcome. *IEEE VisWeek Workshop on Visual Analytics in Healthcare (2011)*, Providence, Rhode Island.

Shahram Ebadollahi, Jimeng Sun, David Gotz, Jianying Hu, Daby Sow, and Chalapathy Neti. Predicting Patient's Trajectory of Physiological Data using Temporal Trends in Similar Patients: A System for Near-Term Prognostics. *American Medical Informatics Association Annual Symposium (2010)*, Washington, DC.

Jimeng Sun, David Gotz, and Nan Cao. A Visualization Tool for Navigation of Online Disease Literature. *American Medical Informatics Association Annual Symposium (AMIA) Posters (2010)*. Washington, DC.

Nan Cao, Jimeng Sun, Yu-Ru Lin, David Gotz, Shixia Liu and Huamin Qu. FacetAtlas: Multi-facet Visualization for Rich Text Corpora. *IEEE Information Visualization (2010)*, Salt Lake City, Utah.

Jimeng Sun, David Gotz and Nan Cao. DiseaseAtlas: Multi-facet Visual Analytics for Online Disease Articles. *International Conference of the IEEE Engineering in Medicine and Biology Society (2010)*, Buenos Aires, Argentina.

David Gotz, Zhen Wen, Jie Lu, Peter Kissa, Nan Cao, Wei Hong Qian, Shi Xia Liu and Michelle X. Zhou. HARVEST: An Intelligent Visual Analytic Tool for the Masses.

Proceedings of the First International Workshop on Intelligent Visual Interfaces for Text Analysis (2010), Hong Kong, China.

Yedendra Shrinivasan and David Gotz. Connecting the Dots in Visual Analysis. *Proceedings of IEEE Visual Analytics Science and Technology* (2009), Atlantic City, New Jersey.

Yedendra Shrinivasan and David Gotz. Connecting the Dots with Related Notes. *Proceedings of ACM CHI Extended Abstracts* (2009), Boston, Massachusetts.

David Gotz and Zhen Wen. Behavior-Driven Visualization Recommendation. *Proceedings of ACM Intelligent User Interfaces* (2009), Sanibel, Florida.

Wen-Huang Cheng and David Gotz. Context-Based Page Unit Recommendation for Web-Based Sensemaking Tasks. *Proceedings of ACM Intelligent User Interfaces* (2009), Sanibel, Florida.

David Gotz and Michelle X. Zhou. Characterizing Users' Visual Analytic Activity for Insight Provenance. *Proceedings of IEEE Visual Analytics Science and Technology* (2008), Columbus, Ohio.

David Gotz, Zhen Wen, Jie Lu, Peter Kissa, Michelle X. Zhou, and Nan Cao, Wei Hong Qian, Shi Xia Lui. HARVEST – Visualization and Analysis for the Masses. *Proceedings of IEEE Information Visualization, Poster Program* (2008), Columbus, Ohio.

Wen-Huang Cheng and David Gotz. Context-Based Page Unit Recommendation for Web-Based Sensemaking Tasks. *Proceedings of the International World Wide Web Conference, Poster Program* (2008), Beijing, China.

David Gotz. The ScratchPad: Sensemaking Support for the Web. *Proceedings of the International World Wide Web Conference, Poster Program* (2007), Banff, Canada.

David Gotz. Scalable and Adaptive Streaming for Non-Linear Media. *Proceedings of ACM Multimedia* (2006), Santa Barbara, California.

David Gotz and Michelle X. Zhou, Vikram Aggarwal. Interactive Visual Synthesis of Analytic Knowledge. *Proceedings of IEEE Visual Analytics Science and Technology* (2006), Baltimore, Maryland.

David Gotz, Michelle X. Zhou, and Zhen Wen. A Study of Information Gathering and Result Processing in Intelligence Analysis. *Proceedings of Workshop on Intelligent User Interfaces for Intelligence Analysis* (2006). Sydney, Australia.

David Gotz and Ketan Mayer-Patel. A General Framework for Multidimensional Adaptation. *Proceedings of ACM Multimedia* (2004). New York City, New York.

David Gotz. Supporting Adaptive Remote Access to Multiresolutional or Hierarchical Data for Large User Groups. *ACM Multimedia Doctoral Symposium* (2004). New York City, New York.

David Gotz, Ketan Mayer-Patel, and Dinesh Manocha. IRW: An Incremental Representation for Image-Based Walkthroughs. *Proc. of ACM Multimedia* (2002). Juan-les-Pins, France.

Ruigang Yang, David Gotz, Justin Hensley, Herman Towles, and Michael S. Brown. PixelFlex: A Reconfigurable Multi-Projector Display System. *Proc. of IEEE Visualization* (2001). San Diego, California.

Jarrell Pair, Carlos Jensen, Jeff Wilson, Larry Hodges, David Gotz, and Julian Flores. The NAVE: Design and Implementation of a Non-Expensive Immersive Virtual Environment. *Presented at SIGGRAPH Sketches and Applications* (2000), New Orleans, Louisiana.

Larry Hodges, Barbara Rothbaum, Renato Alacron, David Ready, Fran Shahar, Ken Graap, Jarrell Pair, Philip Hebert, David Gotz, Brian Wills, and David Baltzell. Virtual Vietnam: A Virtual Environment for the Treatment of Vietnam Veterans with Post-Traumatic Stress Disorder. *Proc. of the 8th International Conference on Artificial Reality & Tele-Existence* (1998). Tokyo, Japan.

REFEREED JOURNAL ARTICLES

David Gotz and Michelle X. Zhou. Characterizing User's Visual Analytic Activity for Insight Provenance. *Information Visualization* (Volume 8, Number 1, 2009).

Ketan Mayer-Patel and David Gotz. Scalable and Adaptive Streaming for Non-Linear Media. *IEEE MultiMedia* (Volume 14, Number 3, 2007).

David Gotz and Ketan Mayer-Patel. A Framework for Scalable Delivery of Digitized Spaces. *International Journal on Digital Libraries* (Volume 5, Number 3, 2005).

Barbara Rothbaum, Larry Hodges, Renato Alacron, David Ready, Fran Shahar, Ken Graap, Jarrell Pair, Philip Hebert, David Gotz, Brian Wills, and David Baltzell. Virtual Reality Exposure Therapy for PTSD Vietnam Veterans: A Case Study. *Journal of Traumatic Stress* (Volume 12, Issue 2, 1999).

Larry Hodges, Barbara Rothbaum, Renato Alacron, David Ready, Fran Shahar, Ken Graap, Jarrell Pair, Philip Hebert, David Gotz, Brian Wills, and David Baltzell. A Virtual Environment for the Treatment of Chronic Combat-Related Post-Traumatic Stress Disorder. *CyberPsychology & Behavior* (Volume 2, Number 1, 1999).

TECHNICAL REPORTS

David Gotz. Dynamic Voronoi Treemaps: A Visualization Technique for Time-Varying Hierarchical Data. *IBM Research Technical Report RC25132* (2011).

David Gotz and Michelle X. Zhou. An Empirical Study of User Interaction Behavior During Visual Analysis. *IBM Research Technical Report RC24525* (2008).

David Gotz, Michelle X. Zhou, and Zhen Wen. A Study of Information Gathering and Result Processing in Intelligence Analysis. *IBM Research Technical Report RC24140* (2006).

David Gotz and Ketan Mayer-Patel. GAL: A Middleware Library for Multidimensional Adaptation. *UNC-CS Technical Report TR05-023* (2005).

David Gotz and Ketan Mayer-Patel. Scalable and Adaptive Streaming for Non-Linear Media. *UNC-CS Technical Report TR05-022* (2005).

Brian Begnoche, David Gotz, and Ketan Mayer-Patel. The Design and Implementation of StrandCast. *UNC-CS Technical Report TR05-004* (2005).

David Gotz. The Design and Implementation of Pixel Flex: A Reconfigurable Multi-Projector Display System. *UNC-CS Technical Report TR01-025* (2001).

PhD COMMITTEES

Yedendra Shrinivasan, Technische Universiteit Eindhoven (*Advisor: Jack van Wijk*)
Graduated June 2010. Now at IBM Research India.

RESEARCH INTERNS SUPERVISED

Krist Wongsuphasawat. University of Maryland. Summer 2011.

Nan Cao. Hong Kong University of Science and Technology. Summer 2010.

Yedendra Shrinivasan. Technische Universiteit Eindhoven. Summer 2008.
Now at IBM Research India

Wen-Huang Cheng. National Taiwan University, Summer 2007.
Now at the Institute of Information Science, Academia Sinica

TEACHING EXPERIENCE

University of North Carolina at Chapel Hill
COMP 14: Introduction to Programming

Georgia Institute of Technology

PATENTS

Method for Interactive Visualization of Temporal Pathways and Correlated Outcomes
(Patent Application Pending)

Method and System for Visually Exploring Multivariate Data Sets Through Smart Icons
(Patent Application Pending)

Method and System for Multifaceted Visualization for Topic Exploration
(Patent Application Pending)

Generating Animated Voronoi Treemaps to Visualize Dynamic Hierarchical Data with Node Insertion
(Patent Pending, Filed 7/12/2010)

Generating Animated Voronoi Treemaps to Visualize Dynamic Hierarchical Data
(Patent Pending, Filed 7/12/2010)

Method for Generating Animated Voronoi Treemaps to Visualize Dynamic Hierarchical Data
(Patent Pending, Filed 5/28/2010)

Recommending one or more concepts related to a current analytic activity of a user.
(Patent Pending, Filed 9/25/2009)

Recommending one or more existing notes related to a current analytic activity of a user.
(Patent Pending, Filed 9/25/2009)

Method and apparatus for intelligent exploratory visualization and analysis.
(Patent pending, Filed 2/6/2009)

Methods and apparatus for obtaining visual insight provenance of a user.
(Patent Pending; Filed 8/27/2008).

Methods and apparatus for visual recommendation based on user behavior.
(Patent Pending; Filed 8/20/2008).

Context-based document unit recommendation for sensemaking tasks.
(Patent Pending; Filed 4/18/2008).

Methods for organizing information accessed through a web browser.
(Patent Pending; Filed 7/20/2007).

Techniques for organizing information accessed through a web browser.

(Patent Pending; Filed 7/20/2007).

PROFESSIONAL SERVICE

2012

Co-Chair, Financial Support for ACM SIGHT International Health Informatics Symposium

2011

Co-Chair, Tutorial Program for IEEE VisWeek
Co-Chair, IEEE VisWeek Workshop on Visual Analytics in Health Care
Co-Chair, ACM KDD Workshop on Visual Analytics and Information Fusion
Track Co-Chair, International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC)
Program Committee for the International Conference on Information Visualization Theory and Applications
Program Committee for the International Symposium on Visual Computing

2010

Co-Chair, IEEE VisWeek Workshop on Visual Analytics in Health Care
Co-Chair, Tutorial Program for IEEE VisWeek
Program Committee for ACM Multimedia
Program Committee for the International Conference on Information Visualization Theory and Applications
Program Committee for the International Symposium on Visual Computing

2009

Program Committee for IEEE VAST
Program Committee for ACM Multimedia
Program Committee for the International Symposium on Visual Computing

2008

Co-Chair, Poster Program for IEEE VAST
Program Committee for ACM Multimedia
Program Committee for the International Symposium on Visual Computing

2007

Co-Chair, Poster Program for IEEE VAST
Program Committee for ACM Multimedia

2006

Program Committee for ACM Multimedia
Best Short Paper Award Committee Member for ACM Multimedia Conference

Reviewer for:

ACM Conference on Human Factors in Computing Systems (CHI)

ACM Multimedia
ACM Transactions on Multimedia Computing, Communications and Applications
Eurographics
IBM Journal of Research and Development
IEEE Information Visualization (InfoVis)
IEEE International Conference of Pervasive Computing and Communications
IEEE MultiMedia Magazine
IEEE Transactions on Circuits and Systems for Video Technology
IEEE Visual Analytics Science and Technology (VAST)
International Symposium on Visual Computing
International Conference on Information Visualization Theory and Applications
National Science Foundation