

Vidya Setlur

Curriculum Vitae

Nokia Research Center
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RESEARCH INTEREST

As computers become faster, smaller and more interconnected, their primary function is shifting from computation to communication. The goal of my research is to develop new computer algorithms and user interfaces that enhance visual communication. My research combines concepts and methods from visual art, perceptual psychology, information processing, and cognitive science to facilitate a viewer in understanding and interpreting computer imagery. I like to collectively group these concepts as *functional aesthetics*.

EDUCATION

Doctor of Philosophy, June 2005.

NORTHWESTERN UNIVERSITY, EVANSTON, IL Advisor: Professor Bruce Gooch
Dissertation Title: Optimizing Computer Imagery for More Effective Visual Communication

Master of Science Computer Science, June 2004.

NORTHWESTERN UNIVERSITY, EVANSTON, IL.

Bachelor of Science in Computer Engineering, with honors, December 2000.

BANGALORE INSTITUTE OF TECHNOLOGY, BANGALORE, INDIA.

Honors Thesis Title: Behavior Protocols in Internet Auctions

Honors Thesis Advisor: Professor Yadati Narahari

Department of Computer Science and Automation,

INDIAN INSTITUTE OF SCIENCE, BANGALORE, INDIA.

RESEARCH EXPERIENCE

Principal Researcher Scientist, 2006 - present.

NOKIA RESEARCH CENTER, PALO ALTO, CA.

I am part of the User Interfaces group. My work involves researching novel rendering algorithms particularly targeted for mobile based interactive visualizations. My research interests include semantic graphics, i.e. the usage of machine learning to better improve graphics design, such as for maps, sensor based technologies, and smart environments that intelligently react and respond to users.

Research Scientist, 2005 - 2006.

NOKIA RESEARCH CENTER, DALLAS, TX.

Worked on technologies of rich media services, i.e. the ability to integrate advances made in the mobile space domain, delivering music, speech, text, raster graphics, scalable vector graphics (SVG) and video. This involves the ability to deliver these modalities, to interact with these modalities, and to do it in a way that allows for the construction, delivery and use of compelling mobile services in an effective and economic manner. This includes contribution to standards (3GPP, OMA, W3C) and developing features to extend SVG to support rich media functionality on Symbian S60 platforms. Several patents were filed and a publication submitted to an IEEE conference. Applications include interactive maps, mobile TV and mobile entertainment.

Involved in the Future UI Program to provide advanced graphics effects, hardware acceleration and optimization to 2D and 3D UI components on S60, S40 and Linux platforms. Exploring a new genre of OpenGL ES 2.0 shader effects for mobile UI. Working with Nokia UI Design team to explore usability concepts and mapping graphics technology to such concepts.

Graduate Research Assistant, 2001 - 2005.

NORTHWESTERN UNIVERSITY, EVANSTON, IL.

Automatic Image Retargeting, to provide *effective* small images by preserving the recognizability of important image features during downsizing.

Semanticons, an information visualization method for automatically generating semantically enhanced file icons in desktop applications.

Vector-Based Animation Retargeting, to enable *Flash* animations created for the World Wide Web to accommodate the aspect ratios of handheld display devices.

Mona Lisa Smile, a software system that allows non-artists to easily create novel and interesting portraits that depict conflicting emotional states at varying spatial frequencies. This work is based on psychologists' theories on the secret behind Mona Lisa's enigmatic smile.

PUBLICATIONS

REFEREED JOURNAL AND CONFERENCE PUBLICATIONS

Sohn, T., Setlur, V., Mori, K., Kaye, J., Horii, H., Battestini, A. Ballagas, R., Paretto, C., Spasojevic, M. Addressing Mobile Information Overload in the Universal Inbox through Lenses. *Mobile Human Computer Interaction (MobileHCI)* 2010.

Battestini, A., Setlur, V., Sohn, T. A Large Scale Study of Text Messaging Use. *Mobile Human Computer Interaction (MobileHCI)* 2010.

- Setlur, V., Kao, C., Mikelsons, P. Towards Designing Better Map Interfaces for the Mobile: Experiences from Example. The 1st International Conference on Computing for Geospatial Research and Application.
- Tian, F., Lv, F., Wang, J., Wang, H., Luo, W., Kam, M., Setlur, V., Dai, G., Canny, J. Lets Play Chinese Characters Mobile Learning Approaches via Culturally Inspired Group Games, CHI 2010.
- Setlur, V., Battestini, A., Sohn, T., Horii, H. Using Gestures on Mobile Phones to Create SMS Comics, International Conference on Tangible, Embedded and Embodied Interaction (TEI), 2010.
- Chen, W., Battestini, A., Gelfand, N., Setlur, V. Visual Summaries of Popular Landmarks from Community Photo Collections , ACM Multimedia 2009.
- Setlur, V., Battestini, A. Using Comics as a Visual Metaphor for Enriching SMS Messages with Contextual and Social Media, MobileHCI 2009, Workshop on Sharing Experiences with Social Mobile Media.
- Setlur, V., Battestini, A., and Ding, Xianghua. Automatic Generation of Travel Scrapbooks, IEEE International Conference on Multimedia and Expo (ICME), 2009.
- Setlur, V., Rossoff, S., Gooch, B. SemantiLynx: Using Context Based Icons for Web Navigation and Directed Search Tasks, UIST 2008.
- Tian, F., Setlur, V., Tilt Menu: Using the 3D Orientation Information of Pen Devices to Extend the Selection Capability of Pen-based User Interfaces, CHI 2008.
- Setlur, V., Neinhaus, M., Lechner, T., Gooch, B. Retargeting Images for Preserving Information Saliency, IEEE Computer Graphics and Applications (CG&A) 2007.
- Tian, F., Ao, X., Wang, H., Setlur, V., Dai, G. The Tilt Cursor: Enhancing Stimulus-Response Compatibility by Providing 3D Orientation Cue of Pen, CHI 2007.
- Capin, T., Haro, A., Setlur, V., and Wilkinson, S., Camera-Based Virtual Environment Interaction on Mobile Devices, 21st International Symposium on Computer and Information Sciences (ISCIS), 2006.
- Setlur, V., Optimizing Computer Imagery for More Effective Communication. ACM Grace Hopper Conference for Women in Computing, 2006.
- Setlur, V., Capin, T., Chitturi, S., Vedantham, R., and Ingrassia, M., MORE: Mobile Open Rich-media Environment, IEEE International Conference on Multimedia and Expo (ICME), 2006.
- Setlur, V., Wilkinson, S. Automatic Stained Glass Rendering. Computer Graphics International (CGI) 2006.
- Setlur, V., Takagi, S., Raskar, Ramesh., Gleicher, M., and Gooch, B. Automatic Image Retargeting. In the Mobile and Ubiquitous Multimedia (MUM) 2005, ACM Press 2005.
- Setlur, V., Xu, Yingqing, and Gooch, B. Vector Based Retargeting. In the Mobile and Ubiquitous Multimedia (MUM) 2005, ACM Press 2005.
- Haro, A., Mori, K., Setlur, V., and Capin, T. Mobile Camera-based Adaptive Viewing. In the Mobile and Ubiquitous Multimedia (MUM) 2005, ACM Press 2005.

Setlur, V., Albrecht-Buehler, C., Gooch, A., Rossoff, S., Gooch, B. Semanticons: Semantic-Based File Icons. In IEEE Computer Graphics and Applications Special Issue on Smart Depiction 2004, IEEE Press, 2004.

Setlur, V., and Gooch, B. Is That a Smile? Gaze Dependent Facial Expressions. In Proceedings of the 3rd International Symposium on Non-photorealistic Animation and Rendering 2004, pp. 79 - 86, ACM Press, 2004.

Setlur, V., Shamma, D., and Hammond, K. Towards a Non-Linear Narrative Construction. In Proceedings of the 8th International Conference on Intelligent User Interfaces 2003, pp. 82-86, ACM Press, 2003.

TECHNICAL REPORTS AND CONFERENCE PRESENTATIONS

Setlur, V., Albrecht-Buehler, C., Gooch, A., Rossoff, S., Gooch, B. Semanticons: Semantic-Based File Icons. Northwestern University Technical Report. NWU-CS-04-46, 2004.

Setlur, V., Takagi, S., Raskar, R., Gleicher, M., and Gooch, B. Automatic Image Retargeting. Conference Abstracts and Applications of ACM SIGGRAPH 2004.

Setlur, V., Takagi, S., Gleicher, M., Raskar, R., and Gooch, B. Automatic Image Retargeting. Northwestern University Technical Report. NWU-CS-04-41, 2004.

TEACHING AND MENTORING

I am interested in teaching interdisciplinary graduate level courses in information visualization, computer graphics, computational aesthetics, art and perception. At the undergraduate level I am interested in teaching algorithms, data structures, introductory programming courses, web technologies, human computer interaction, and graphics.

Lecturer, San Jose State University, 2007

Taught Mobile Multimedia Technologies, an undergraduate and graduate course on mobile 2d and 3D Java based graphics APIs, web technologies and Flash Lite.

Industry Mentor, Stanford University

Fall 2006 - Spring 2007, advising 4 students on a specific joint project between Nokia Research Center, Nokia Design and Stanford Design Schools ME 310 course. Mentoring involves feedback, suggestions and advice on presentations and prototypes developed by this student group.

Teaching Assistant, Northwestern University

CS 395/495-25: Non-photorealistic Rendering (with Bruce Gooch), Department of Computer Science, Northwestern University, Winter 2004. Developed class web page, led discussion, and performed evaluation.

CS 330: Human-Computer Interaction (with Ben Watson and Louis Gomez), Department of Computer Science, Northwestern University, Winter 2002. Led discussion, grading and

example solutions, office hours.

CS 130: Tools and technology of the World-Wide Web (with Kristian Hammond and Sanjay Sood), Department of Computer Science, Northwestern University, Fall 2002. Grading

CS 336: Design and Analysis of Algorithms, Department of Computer Science, Northwestern University, Spring 2001. Grading.

Teaching Mentor, Northwestern University

Mentored new graduate students on teaching engineering courses at the Searle Center for Teaching Excellence, Northwestern University in Summer 2002 under the guidance of Melissa Luna. Prepared teaching material, and course notes, and advised students on teaching techniques and grading.

PATENTS

22 patents pending.

INVITED TALKS

Semantic Graphics for More Effective Visual Communication, keynote at Graphics Interface 2009.

Diversity in your Workplace, March 2009, CRA-W Graduate Cohort Workshop.

Non-Academic Career Path Post Ph.D., March 2009, CRA-W Graduate Cohort Workshop.

Semantilinks: Context Aware Hyperlinks for More effective Browsing, April 2006, Nokia Exchange for Research and Development (NERD) 2006, Helsinki, Finland.

Time Management and Balance: A Graduate School Gathering, October 8 2004, Grace Hopper Conference, Chicago, IL.

Vector-Based Animation Retargeting, November 6 2004, the Mid-Graph Conference, Northwestern University, Evanston, IL.

Is that a Smile? Gaze Dependent Facial Expressions, November 10 2003, the Mid-Graph Conference, Washington University, St. Louis, MO.

A Life Without Friction: Tales from the InfoLab, January 2003, the International Conference of Intelligent User Interfaces, Miami, FL.

PRESENTATIONS AND SYSTEM DEMONSTRATIONS

Nokia Mashups. Demo and poster at HotMobile 2009.

Intelligent Visual Matching for Providing Context-Aware Information to Mobile Users. Supplemental proceedings of the UbiComp 2007.

Image Retargeting and Semantics. At the first annual Computer Science Department Open House (with Bruce Gooch), September 2004.

Image Retargeting and Semantics. McCormick External Advisory Committee (with Bruce Gooch), September 2004.

Imagination Environment. At the 8th International Conference on Intelligent User Interfaces (with Ayman Shamma), January 2003.

INTERNSHIP

Spring 2004, worked on a video processing project at Mitsubishi Electric Research Labs (MERL), Cambridge, MA with Dr. Ramesh Raskar.

Project Description:

Involved in a project to interactively edit video as a 3D volume in the space-time domain. This allows users to perform video fast-forwarding by indicating volumetric areas in 3D space that can be skipped or deleted.

FELLOWSHIP

2002 Teaching Assistant Fellow at the Searle Center for Teaching Excellence, Northwestern University, Evanston, IL.

Designed and conducted teaching assistant workshops.

PROFESSIONAL AFFILIATIONS AND SERVICE

General chair of the International Conference on Mobile and Ubiquitous Multimedia (MUM) 2006, held at Stanford University.

Reviewer for SIGGRAPH, Eurographics, InfoVis, IEEE CG&A, IEEE Transactions on Multimedia.

President of the ACM-W (ACM Women in Computing) organization at the Computer Science Department at Northwestern University. 2003 - 2004

Member of ACM and IEEE.

REFERENCES

Professor Bruce Gooch (Doctoral Advisor)

E-mail: brucegooch@gmail.com.

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504 PO Box 3055, STN CSC Victoria, BC Canada V8W 3P6. Phone: 250-472-5758.

Professor Benjamin Watson, Associate Professor

E-mail: bwatson@ncsu.edu Department of Computer Science, North Carolina State Univer-
sity EBI I, 890 Oval Dr, Box 8206, Raleigh, NC 27695-8206 USA. Phone: 919-513-0325.

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