

# Conrad Albrecht-Buehler

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## EDUCATION

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<b>Ph.D., Computer Science (Human-Computer Interaction)</b> Title: " <i>Heed: A Framework For Situation Aware Monitoring</i> " Advisor: Professor Donald Norman McCormick School of Engineering Northwestern University	2008
<b>M.S., Computer Science</b> McCormick School of Engineering Northwestern University	2003
<b>B.A., Geological Sciences</b> Northwestern University	1998

## ACADEMIC RESEARCH EXPERIENCE

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**Graduate Research Assistant**, Northwestern University (Evanston, IL)  
September 2000 – October 2008

Work with Donald Norman

- Conducted innovative research in human-computer interaction.
- Invented a new class of monitoring tools based on *Heed*, a framework and arithmetic for conveying the importance of attending to a situation.
- Designed the *Gizmometer*, a Heed-based monitoring interface for situation awareness.
- Deployed four diverse monitoring applications based on the *Gizmometer* interface.
- Performed a successful user study of the deployed applications with veterinarians, computer systems administrators, with business executives, and with online community moderators.

Work with Benjamin Watson

- Produced *TextPool*, a tool for the visualization of streaming text sources such as news, blogs, email, or closed captioning.
- Authored a series of design guidelines for using motion to convey information.
- Managed the operations of a research lab and built an ultra-high resolution display.
- Studied methods of 3D shape description and categorization by negative Gaussian curvature topology.
- Created a frameless rendering engine for ultra-high resolution ray-tracing animation.
- Designed several acceleration-based user interfaces for use in mobile devices.

Work with Bruce Gooch

- Invented *Semanticons*, an information visualization method for automatically generating semantically enhanced file icons in desktop applications.
- Directed a user study to determine the effectiveness of *Semanticons* over file icons for file content recall.
- Consulted on multitouch interactions for a virtual Pollock-like painting interface.

Work with Kristian Hammond

- Advised student research in narrative discovery for use in story telling applications through the querying of blog entries.

Work with Jennifer Schopf

- Explored a distributed file sharing system for high-energy physics research collaboration.

**Computer Science Research Staff Member,**

Oak Ridge National Laboratory (Oak Ridge, TN) November 1998 – August 2000

- Prototyped *HARNES*S, a distributed, parallel computing environment.

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PROFESSIONAL EXPERIENCE

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**Co-founder,** HeedMetrics (Chicago, IL.)

March 2009 - present

- Founded start-up to create monitoring interfaces for financial analysts.
- Prototyped interfaces and conducted exploratory user research.
- Devised business plan and met with venture capital firms.

**Consultant,** Segal Design Institute, Northwestern University (Evanston, IL.)

January 2009 – present

- Managed redesign of Segal web site.
- Coordinated faculty, student, and affiliate stakeholders with web communications team.
- Created interface prototypes and an information architecture to leverage web 2.0 services to empower the student community.

**Consultant,** Informing Ecological Design, LLC (Madison, WI.)

December 2007 – February 2008

- Authored a proposal for the design of an environmental monitoring and control interface for the WID | MIR building.
- Taught design team about interface elements that develop awareness about energy consumption without taxing user attention.

**User-Study Consultant,** Sittercity, Inc. (Chicago, IL.)

December 2007 – February 2008

- Conducted a successful user-study to support the redesign of the company's web application interface.
- Educated the management team on the value and methods of user studies and paper prototyping methods.

**QuickTime Marketing Intern,** Apple Computer, Inc. (Cupertino, CA)

June 2003 – December 2003

- Created a system for the collection and analysis of sales and marketing data.
- Invented a simple method of connecting Bluetooth wireless devices.
- Designed alternative iPod interfaces.

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TEACHING EXPERIENCE

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**Instructor,** Spring 2009, Spring 2008

**Co-Instructor** with Donald Norman, Spring 2005

**Teaching Assistant** for Donald Norman and Bruce Ankenman, Spring 2003, 2004

*Human-Centered Product Design*

The Segal Design Institute, Northwestern University

- Co-created project course in which students learn methods of human-centered design and apply to them to user needs of their own choosing which culminate in working prototypes. The course is consistently very highly rated by students.

**Co-Instructor** with John Anderson and Deborah Wood, Winter 2009

*Engineering, Design, and Communication*

The Segal Design Institute, Northwestern University

- Instructor of project course in which students follow human-centered design practices to design an insulin pen and a camera for users with hemiplegia.

**Instructor**, Spring 2003

*Designing Smart Devices*

The Segal Design Institute, Northwestern University

- Created a short course to introduce concepts of detecting user context, and designing interactions based on context.

**Teaching Assistant** for Bruce Ankenman Fall 2005 – Spring 2007

*Engineering Design and Communication*

The Segal Design Institute, Northwestern University,

**Teaching Assistant** for Ben Watson, Winter 2003

*Human-Computer Interaction*

Department of Computer Science, Northwestern University

**Teaching Assistant** for Ben Watson, Fall 2001

*Introduction to Computer Graphics*

Department of Computer Science, Northwestern University

**Teaching Assistant** for Jennifer Schopf, Winter 2001

*Tools for Computational Science and Engineering*

Department of Computer Science, Northwestern University

**Teaching Assistant** for Morteza Rahimi, Winter 1998

*Telecommunication Networks for the Emerging Multimedia Environment*

Kellogg School of Management

## PUBLICATIONS

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### *Journal Articles*

Albrecht-Buehler, C., Watson, B., Shamma, D. Visualizing Live Text Streams Using Motion and Temporal Pooling. In IEEE Computer Graphics and Applications Special Issue on Smart Depiction 2005, IEEE Press, 2005.

### *Refereed Publications*

Stehle, C and Albrecht-Buehler, C. Developing More Desirable Products for Stroke Survivors. Topics in Stroke Rehabilitation, Thomas Land Publishers, 2008.

Ruberry, M., Owsley, S., Shamma, D. A., Hammond, K. J., Budzik, J., Albrecht-Buehler, C., Affective Behaviors for Theatrical Agents. In proceedings of Intelligent User Interfaces Workshop on Affective Interactions: The Computer in the Affective Loop. San Diego, 2005.

Setlur, V., Albrecht-Buehler, C., Gooch, A., Gooch, B. Semanticons: Visual Metaphors as File Icons, The Proceedings of the Annual Conference of the European Association for Computer Graphics, 2005.

## Dissertation and Technical Reports

Albrecht-Buehler, C (2008). Heed: A Framework For Situation Aware Monitoring (173 pp.). *Northwestern University, Graduate School Dissertation.*

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

Albrecht-Buehler, C., Watson, B., Shamma, D. (2004). TextPool: Visualizing Live Text Streams. *Northwestern University Technical Report. NWU-CS-04-44.*

## INVITED TALKS

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Making Monitoring UIs Suck Less, February 26, 2009, Google, Chicago, IL

Heed: A Framework For Situation Aware Monitoring, December 2, 2008, Microsoft Research, Redmond, WA

Gizmometer: Keeping Tabs On Your System When You've Got Other Things To Do, June 24, 2007, BARcamp, Chicago, IL

Strike While the Iron is Hot: Monitoring Remote Systems for Unpredictable Events, March 7, 2007, Graduate Research Seminar, Northwestern University, Evanston, IL

Developing Products for Stroke Survivors, October 6, 2006, Strategic Development of Products and Environments for People with Stroke: Designing for a Unique Market, Rehabilitation Institute of Chicago, Chicago, IL

Visualizing Live Text Streams Using Motion and Temporal Pooling, November 6 2004, Mid-Graph Conference, Northwestern University, Evanston, IL.

TextPool: Visualizing Live Text Streams (poster session), October 2004, IEEE Symposium on Information Visualization, Austin, TX.

## SYSTEM DEMONSTRATIONS

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TextPool. IEEE Symposium on Information Visualization, October 2004.

GARA. Supercomputing Conference (With Alain Roy), Dallas, TX, November 2000.

HARNESS. Supercomputing Conference, Portland, OR, November 1999.

## AWARDS and FELLOWSHIPS

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Awarded, National Science Foundation East Asia Pacific Summer Institute 2005

Winner, Apple Intern Design Competition "Make Your Own Mac" 2003

## UNIVERSITY SERVICE

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Member, Engineering Design and Communication Core Committee 2005-2007

*Segal Design Institute, Northwestern University*

- Conferred with faculty on the syllabus and direction of course for 150+ students
- Created course assignments and instructional materials.

- Member, Faculty Committee 2002-2005  
*Segal Design Institute, Northwestern University*
- Established design program at Northwestern.
  - Advised on curriculum, courses, and requirements.
- McCormick School of Engineering, Northwestern University*  
 Member, Computer Science Department Curriculum Committee 2002-2003
- Reviewed curriculum and proposed modifications.
- Weinberg College of Arts And Sciences, Northwestern University*  
 Member, College of Arts and Sciences Teaching Awards Committee 1998
- Introduced speaker at commencement ceremonies
  - Created very first web-based nomination form
  - Reviewed nominations and voted on selection

## PROFESSIONAL SERVICE

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- Rehabilitation Institute of Chicago*  
 State of the Science Conference Planning Committee 2005-2006
- Planned conference sessions
  - Invited speakers
- Web Chair, IEEE Conference on Virtual Reality 2004 2003-2004
- Designed, built, and maintained web-site for conference
  - Organized exhibitor advertising
- Reviewer (Conferences):
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| IEEE InfoVis 2005 Papers   | 2005 |
| ACM SIGGRAPH 2005 Sketches                                       | 2005 |
| ACM SIGGRAPH 2005 Symposium on Interactive 3D Graphics and Games | 2005 |
- Member:  
 Association for Computing Machinery SIGCHI

## OTHER INTERESTS

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Active contributor to forums on mobile computing, product design, design education, and multimedia innovation.

## REFERENCES

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Donald A. Norman (Ph.D. advisor)  
 Nielsen Norman Group  
 555 Bryant St. # 208  
 Palo Alto, CA 94301 USA  
 Prof. Computer Science, Psychology, and Cognitive Science  
 Northwestern University norman@northwestern.edu  
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Professor Benjamin Watson  
 bwatson@ncsu.edu  
 Department of Computer Science  
 North Carolina State University  
 EBII, 890 Oval Dr, Box 8206,  
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Department of Industrial Engineering & Management Sciences  
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