

**ANIND K. DEY**

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**CURRENT STATUS**

On September 18, 2000, I defended my thesis research to my thesis committee (advisor, Gregory D. Abowd, Mustaque Ahmad, Blair MacIntyre, Beth Mynatt and external advisor from Stanford, Terry Winograd). My thesis is titled *Providing Architectural Support for Building Context-Aware Applications*. I graduated in December 2000 and am a research scientist at Georgia Tech continuing my research in context-awareness. I am currently applying for both tenure-track faculty positions at academic institutions and research posts at industrial research laboratories.

**RESEARCH STATEMENT**

For the past five years, I have performed research in the areas of context-aware and ubiquitous computing. I believe that context, or sensed information about users and their environments, has been largely untapped in interactive applications. Particularly in today's mobile computing environments and in our visions of ubiquitous computing environments, context changes rapidly. In order for applications to provide relevant and useful services in these environments, they must be aware of this changing context and be able to adapt to it. My dissertation research has focused on human-computer interaction and software engineering issues of making sensed context easily available for programmers to use in their applications. There are a number of additional interesting research challenges that I am interested in pursuing, including determining what context is relevant in different situations and environments, how to acquire that context from the environment and distribute it to applications, and what adaptation is appropriate in different situations and when to apply it.

**RESEARCH INTERESTS**

Human-computer interaction, context-aware computing, ubiquitous and mobile computing

**EDUCATION**

- Sep 1995 – Dec 2000    **College of Computing, Georgia Institute of Technology**, Atlanta, GA, USA  
**Ph.D. in Computer Science**, specializing in context-aware and ubiquitous computing. Thesis titled *Providing Architectural Support for Building Context-Aware Applications*.  
Received **Master of Science in Computer Science** at this time as well.
- Sep 1993 – Jun 1995    **School of Aerospace Engineering, Georgia Institute of Technology**, Atlanta, GA, USA  
**Master of Science in Aerospace Engineering**
- Sep 1988 – May 1993    **Simon Fraser University (SFU)**, Burnaby, BC, Canada  
**Bachelor of Applied Science in Computer Engineering**  
Graduated second in class, given Award of Distinction for thesis work.  
Completed 5 internships as part of degree.

**EMPLOYMENT**

- Jan 2000 – present    **Research Scientist**, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA  
Continuing to build context-aware computing infrastructure and toolkit to support application designers in building context-aware applications.  
(<http://www.cc.gatech.edu/fce/contexttoolkit>)

- Dec 1997 – Dec 2000 **Graduate Research Assistant**, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA  
Built context-aware computing infrastructure and toolkit to support application designers in building context-aware applications. Work was for my PhD thesis. (<http://www.cc.gatech.edu/fce/contexttoolkit>)
- Sep 1997 – Dec 1997 **Research Engineer**, Interval Research Corporation, Palo Alto, CA, USA  
Created an information visualization tool and a context-aware information access prototype. (<http://www.interval.com>)
- Jun 1997 – Sep 1997 **Independent Contractor**, Motorola, Scottsboro, AZ, USA  
Extended previously built context-aware computing infrastructure for mobile computing environments. (<http://www.cc.gatech.edu/fce/cyberdesk>)
- Oct 1996 – Jun 1997 **Graduate Research Assistant**, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA  
Built context-aware computing infrastructure for desktop computing environments. Infrastructure provides runtime integration of applications and services to ease designer and user burden. Built using Java and WWW technologies. (<http://www.cc.gatech.edu/fce/cyberdesk>)
- Jun 1996 – Oct 1996 **Research Engineer**, Motorola, Schaumburg, IL, USA  
Developed a prototype in the area of wireless internet services, for accessing various types of personal and public information. Tested the prototype for various human factors issues. (<http://www.cc.gatech.edu/fce/savoir>)
- Sep 1995 – Jun 1996 **Graduate Research Assistant**, College of Computing, Georgia Institute of Technology, Atlanta, GA, USA  
Assisting in design of a Virtual Geographic Information System (VGIS), a real-time display of terrain, vehicles, and other information. Responsibilities include data conversion, real-time data transfer and construction of virtual environments based on VGIS. (<http://www.cc.gatech.edu/gvu/datavis/research/vgis.html>)
- Sep 1993 – Sep 1995 **Graduate Research Assistant**, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA, USA  
Assisted in developing a real-time, high fidelity graphical flight simulation model for the Apache helicopter in the Georgia Institute of Technology flight simulation laboratory. Worked on several research projects involving unmanned autonomous helicopters:
- Developing flight simulation models,
  - Designing the helicopters, and
  - Documenting the design process.
- Last and largest project was designing an autonomous helicopter that performs reconnaissance and surveillance missions for the US Army, using an Object Oriented Methodology in combination with Concurrent Engineering. (<http://asrt.cad.gatech.edu>)
- Jun 1992 – May 1993 **Research Engineer**, Andrew Engineering, Inc., Vancouver, BC, Canada  
Researched and designed a neural network for diagnosing vibration problems in tractor trailers. Designed and built vibration sensors and constructed various testing mechanisms. Work was for my undergraduate thesis, for which I received an Award of Distinction.
- Jun 1992 – May 1993 **Teaching Assistant**, SFU Math Department, Burnaby, BC, Canada  
Taught undergraduate calculus and statistics in a math lab.

- May 1991 – Aug 1991 **Research Engineer**, Indian Institute of Technology, New Delhi, India  
Worked on a confidential defense project that included designing and building electronic circuits, programming microcomputers, and programming DSP chips.
- Sep 1990 – Dec 1990 **Research Engineer**, SFU Micromachining Lab, Burnaby, BC, Canada  
Learned how to create and created microchips on silicon wafers. Built a micro-pump with width of only a few microns, when doing research on artificial heart valves.
- Jan 1990 – Apr 1990 **Research Engineer**, Alberta Telecommunications Research Co., Edmonton, Canada  
Assisted a Ph.D. student in designing and building an opto-electronic switching matrix to be used for neural network research. Gained vast experience in fiber optics and in electronic design.
- May 1989 – Aug 1989 **Programmer**, Newnes Automation, Inc., Salmon Arm, BC, Canada  
Wrote controller software to guide lasers in evaluating worth of lumber. Designed and built hardware and wrote software for a cable testing device.

## AWARDS AND GRANTS

- 2000 Named Outstanding Graduate Research Assistant, College of Computing, Georgia Institute of Technology.
- 1999 Received \$10000 grant (principal investigator) from the State of Georgia's Broadband Telecommunications Center to investigate "Computing in the Home".
- 1996 – present Research funding awarded through Motorola's University Partnership in Research (UPR) program. Received award for Outstanding UPR Presentation at Motorola's Science Advisory Board Associates annual meeting (1997).
- 1993 Award of Distinction on undergraduate thesis and Honor Roll at SFU. Received Full Assistantship to attend Georgia Institute of Technology.
- 1992 Won Western Engineering Competition and Conference (WECC) Debate Competition and placed 5th in the Canadian Engineering Competition (CEC). Member of SFU's Gold medal team in an International Micromouse engineering competition.
- 1988 – 1993 SFU Open Scholarship, covering all tuition for 5 years.
- 1998 - 1991 William and Ada Isabelle Steel Memorial SFU Entrance Scholarship, \$(CDN)15000/year for 4 years.

## PUBLICATIONS

### Theses

Dey, A.K. Providing Architectural Support for Building Context-Aware Applications, [Ph.D. thesis](#), December 2000, Dr. Gregory D. Abowd (advisor), College of Computing, Georgia Institute of Technology.

Dey, A.K. *Interface Design for the Rough-Ride-Syndrome Truck Diagnostic Project*, B.Ap.Sc. thesis, May 1993, Dr. Andrew Rawicz (advisor), Engineering Science, Simon Fraser University.

### Journal Papers

Dey, A.K., Salber, D. Abowd, G.D. *A Conceptual Framework and a Toolkit for Supporting the Rapid Prototyping of Context-Aware Applications*, anchor article of a special issue on Context-Aware Computing, to appear in the **Human-Computer Interaction (HCI) Journal**, Vol. 16, 2001.

Schmidt, A., Kortuem, G., Dey, A.K., Morse, D. Co-editor of upcoming issue on *Situated Interaction and Context-Aware Computing* in **Personal and Ubiquitous Computing**, Vol. 5, 2001

Dey, A.K. *Understanding and Using Context*, to appear in **Personal and Ubiquitous Computing**, Vol. 5, 2001.

Abowd, G.D., Dey, A.K., Brotherton, J., Orr, R.J. *Context-awareness in Wearable and Ubiquitous Computing*, **Virtual Reality Society International Journal**, Vol. 3, 1999, pp. 200-211. ([pdf](#))

Dey, A.K., Abowd, G.D., Wood, A. *CyberDesk: A Framework for Providing Self-Integrating Context-Aware Services*, **Knowledge Based Systems**, Vol. 11 (1), September 1998, pp. 3-13. ([pdf](#))

### **Conference and Workshop Publications**

Covington, M.J., Long, W., Srinivasan, S., Dey, A.K., Ahamad, M., Abowd, G.D. *Securing Context-Aware Applications Using Environment Roles*, to appear in the Proceedings of the 6th ACM Symposium on Access Control Models and Technologies ([SACMAT 2001](#)), May 3-4, 2001.

Dey, A.K., Abowd, G.D. *CybreMinder: A Context-Aware System for Supporting Reminders*, in the Proceedings of the 2nd International Symposium on Handheld and Ubiquitous Computing ([HUC2K](#)), September 25-27, 2000, pp. 172-186. ([pdf](#))

Dey, A.K., Abowd, G.D. *The Context Toolkit: Aiding the Development of Context-Aware Applications*, in the Proceedings of the Workshop on Software Engineering for Wearable and Pervasive Computing, June 6, 2000. ([pdf](#))

Dey, A.K. *Enabling the Use of Context in Interactive Applications*, paper in the CHI 2000 Doctoral Consortium, in the Proceedings of the 2000 Conference on Human Factors in Computing Systems ([CHI 2000](#)), April 1-6, 2000, pp. 79-80. ([pdf](#))

Dey, A.K., Abowd, G.D. *Towards a Better Understanding of Context and Context-Awareness*, presented at the [CHI 2000](#) Workshop on The What, Who, Where, When, Why and How of Context-Awareness, April 1-6, 2000. ([pdf](#))

Dey, A.K., Salber, D., Abowd, G.D. *A Context-based Infrastructure for Smart Environments*, in the Proceedings of the 1st International Workshop on Managing Interactions in Smart Environments ([MANSE '99](#)), December 13-14, 1999, pp. 114-128. ([pdf](#))

Dey, A.K., Futakawa, M., Salber, D., Abowd, G.D. *The Conference Assistant: Combining Context-Awareness with Wearable Computing*, in the Proceedings of the 3rd International Symposium on Wearable Computers ([ISWC '99](#)), October 20-21, 1999, pp. 21-28. ([pdf](#))

Salber, D., Dey, A.K., Abowd, G.D. *The Context Toolkit: Aiding the Development of Context-Enabled Applications*, in the Proceedings of the 1999 Conference on Human Factors in Computing Systems ([CHI '99](#)), May 15-20, 1999, pp. 434-441. ([pdf](#))

Dey, A.K. *Context-Aware Computing: The CyberDesk Project*, in the Proceedings of [AAAI '98 Spring Symposium](#), Technical Report SS-98-02, March 23-25, 1998, pp. 51-54. ([html](#))

Dey, A.K., Abowd, G.D., Wood, A. *CyberDesk: A Framework for Providing Self-Integrating Context-Aware Services*, in the Proceedings of the International Conference on Intelligent User Interfaces ([IUI '98](#)), January 6-9, 1998, pp. 47-54. ([pdf](#))

Dey, A.K., Abowd, G.D. *CyberDesk: The Use of Perception in Context-Aware Computing*, extended abstract in the Proceedings of the Workshop on Perceptual User Interfaces ([PUI '97](#)), October 19-21, 1997, pp. 26-27. ([html](#))

Abowd, G.D., Dey, A.K., Orr, R., Brotherton, J. *Context-awareness in Wearable and Ubiquitous Computing*, poster in the Proceedings of the 1<sup>st</sup> International Symposium on Wearable Computing ([ISWC](#)

[97](#)), October 13-14, 1997, pp. 179-180. ([html](#))

Dey, A.K., Abowd, G.D., Pinkerton, M., Wood, A. *CyberDesk: A Framework for Providing Self-Integrating Ubiquitous Software Services*, demo in the Proceedings of the ACM Symposium on User Interface Software and Technology ([UIST '97](#)), October 14-17, 1997, pp. 75-76. ([pdf](#))

Wood, A., Dey, A.K., Abowd, G.D. *CyberDesk: Automated Integration of Desktop and Network Services*, Technical Note in the Proceedings of the 1997 Conference on Human Factors in Computing Systems ([CHI '97](#)), March 22-27, 1997, pp. 552-553. ([pdf](#))

Dey, A.K., Abowd, G.D. *Position Paper on Wearable Computing*, presented at the [CHI 1997](#) Workshop on Wearable Computing, March 22-27, 1997.

Dey, A.K., Kondor, S.A. *Flight Test Planning and Tracking Tools for Autonomous UAV Systems*, in the Proceedings of the 22<sup>nd</sup> Annual Symposium of the Association of Unmanned Vehicle Systems (UAVS '95), July 10-12, 1995.

### **Other Conference Participation**

Dey, A.K., Ljungstrand, P., Schmidt, A. *Distributed and Disappearing User Interfaces in Ubiquitous Computing*, workshop organizer, to appear in the CHI Conference Companion at the 2001 Conference on Human Factors in Computing Systems ([CHI 2001](#)), March 31 - April 5, 2001. ([pdf](#))

Dey, A.K., Abowd, G.D. *Building Context-Aware Applications*, tutorial accepted to the 2001 Conference on Human Factors in Computing Systems ([CHI 2001](#)), March 31 - April 5, 2001. Declined due to conflict with above workshop at the same conference.

Dey, A.K. *Tutorial on Building Context-Aware Applications*, presented at the 2nd International Symposium on Handheld and Ubiquitous Computing ([HUC2K](#)), September 25-27, 2000.

Morse, D. R., Dey, A.K., Armstrong, S. *The What, Who, Where, When, Why and How of Context-Awareness*, workshop organizer, in the Proceedings of the 2000 Conference on Human Factors in Computing Systems ([CHI 2000](#)), April 1-6, 2000, p. 371. ([pdf](#))

Abowd, G.D., Dey, A.K. *Towards a Better Understanding of Context and Context-Awareness*, panel moderator, in the Proceedings of the 1<sup>st</sup> International Symposium on Handheld and Ubiquitous Computing ([HUC '99](#)), September 27-29, 1999, pp. 304-307. ([pdf](#))

### **Georgia Institute of Technology Technical Reports**

Morse, D., Dey, A.K. *Proceedings of the CHI 2000 Workshop on "The What, Who, Where, When, Why and How of Context-Awareness"*, Technical Report GIT-GVU-00-18, GVU Center, Georgia Institute of Technology, October 2000. ([proceedings](#))

Dey, A.K., Mankoff, J., Abowd, G.D. *Distributed Mediation of Imperfectly Sensed Context in Aware Environments*, Technical Report GIT-GVU-00-14, GVU Center, Georgia Institute of Technology, September 2000. ([pdf](#))

Salber, D., Dey, A.K. *Designing for Ubiquitous Computing: A Case Study in Context Sensing*, Technical Report GIT-GVU-99-29, GVU Center, Georgia Institute of Technology, July 1999. ([pdf](#))

Dey, A.K., Salber, D., Futakawa, M., Abowd, G.D. *An Architecture To Support Context-Aware Applications*, Technical Report GIT-GVU-99-23, GVU Center, Georgia Institute of Technology, June 1999. ([pdf](#))

Dey, A.K., Abowd, G.D. *Towards a Better Understanding of Context and Context-Awareness*, Technical Report GIT-GVU-99-22, GVU Center, Georgia Institute of Technology, June 1999. ([pdf](#))

Salber, D., Dey, A.K., Abowd, G.D. *Ubiquitous Computing: Defining an HCI Research Agenda for an*

*Emerging Interaction Paradigm*, Technical Report GIT-GVU-98 –01, GVU Center, Georgia Institute of Technology, February 1998. ([pdf](#))

Abowd, G.D., Dey, A.K., Wood, A. *Applying Dynamic Integration as a Software Infrastructure for Context-Aware Computing*, Technical Report GIT-GVU-97-18, GVU Center, Georgia Institute of Technology, September 1997. ([pdf](#))

Abowd, G.D., Dey, A.K., Orr, R., Brotherton, J. *Context-awareness in Wearable and Ubiquitous Computing*, Technical Report GIT-GVU-97-11, GVU Center, Georgia Institute of Technology, May 1997. ([pdf](#))

Dey, A.K., Abowd, G.D., Pinkerton, M. and Wood, A. *CyberDesk: A Framework for Providing Self-Integrating Ubiquitous Software Services*, Technical Report GIT-GVU-97-10, GVU Center, Georgia Institute of Technology, April 1997. ([pdf](#))

Dey, A.K., Catledge, L.D., Abowd, G.D., Potts, C., *Developing Voice-only Applications in the Absence of Speech Recognition Technology*, Technical Report GIT-GVU-97-06, GVU Center, Georgia Institute of Technology, February 1997. ([pdf](#))

### **Invited Talks**

*The Aware Home: Testbed for Context-Aware Computing*. SAP Labs, Karlsruhe, Germany, January 19, 2001.

*The Context Toolkit: Supporting Context-Aware Computing*. University of Karlsruhe: Lecture in the Winter 99/00 course on Ubiquitous Computing, January 18, 2001.

*The Context Toolkit: An Investigation of Context-Aware Computing*. University of Maryland Human Computer Interaction Laboratory (HCIL) Fall 2000 Seminar Series, November 14, 2000.

*The Context Toolkit: Building Context-Aware Applications*. British Telecom Laboratories, July 24, 2000.

*Supporting Context-Aware Applications*. British Telecom Laboratories, July 26, 2000.

*The Aware Home: Testbed for Context Aware Computing*. British Telecom Laboratories, July 26, 2000.

*Context Toolkit Tutorial*. British Telecom Laboratories, July 27, 2000.

*The Context Toolkit: Building Context-Aware Applications*. Intel Microprocessor Research Laboratory, April 18, 2000.

*The Broadband Institute Residential Laboratory: a.k.a the Aware Home*. Intel Microprocessor Research Laboratory, April 18, 2000.

*Context-Aware Computing*. Motorola Science Advisory Board Associates annual meeting, October 1997.

*Emerging Technologies for the World Wide Web*. Center for Disease Control, October 1997.

### **SUPERVISION OF STUDENTS: DIRECTED STUDIES AND INTERNSHIPS**

Jeanette Kee, *undergraduate student*. Fall 1999, Spring 2000, Fall 2000 semesters.

Nelson Sepulveda, *summer intern* in Office of Naval Research intern program: Summer 2000 semester.

Carla Nelson, *summer intern* in Office of Naval Research intern program: Summer 2000 semester.

Yohan Kim, *undergraduate student*: Spring 2000, Summer 2000 semesters.

Tanisha Hall, *PhD student*: Fall '99, Spring 2000 semesters.

John Mooney, *undergraduate student*: Summer 1999, Fall 1999, Spring 2000 semesters.

Cheryl Holifield, *summer intern* in Office of Naval Research intern program: Summer 1999 semester.

2 *summer interns* in Office of Naval Research intern program: Summer 1997 quarter.

## SERVICE AND VOLUNTEER ACTIVITIES

2001	Program committee member for User Modeling 2001 workshop on User Modeling for Context-Aware Applications.
2000	Worked with children (ages 4-6) for Hands On Atlanta
2000	Reviewer for ACM User Interface Software and Technology (UIST 2000), Handheld and Ubiquitous Computing 2000 (HUC2K), and Human-Computer Interaction International (HCII 2001)
1999	Reviewer for ACM UIST '99
1999	ACM UIST '99 Symposium Committee Member, Student Volunteer Chair
1998 – present	Held position in Georgia Institute of Technology's College of Computing Graduate Student Council
1997 – present	Ph.D. Mentor for National Science Foundation program; Office of Naval Research program; and internal Georgia Institute of Technology program
1994 – 1995	Member of Neighborhood Block watch Tutored underprivileged children of all ages in low income neighborhood (20 hours/wk) Member of Georgia Institute of Technology's Unmanned Aerial Vehicle Design Team
1992 – 1993	Member of SFU's Micromouse Design Team President of SFU Engineering Student Society
1991 – 1993	Spearheaded campaign to raise funds for children requiring kidney dialysis Actively involved in recruiting students to the SFU Engineering program
1988 – 1993	Fund raiser for Canadian Variety Club Telethon
1988 – 1992	Held various positions in the SFU Engineering Student Society

## SKILLS

- Excellent communication, leadership and teaching skills.
- Skilled in designing electronics and writing software.
- Competent in Modula 2, Pascal, C, Java, C++, PERL, and various assembler languages.
- Familiar with UNIX, Windows, DOS, QNX, Apple operating systems (programmed in all environments).
- Experienced with HP, SGI, SUN workstations, IBM PC's, and Apple computers.
- Knowledgeable on Object Oriented design methodology and Concurrent Engineering techniques.
- Very experienced in working in the Internet, World Wide Web: e-mail, Usenet, WWW browsers, Java, database connectivity, networking, and distributed computing.

## NON-ACADEMIC INTERESTS

- Traveling – backpacked through Eastern Asia and Western Europe for several months, traveled throughout the US and Canada, traveled throughout India.
- Debating and Public Speaking – won several awards at various levels of competition.
- Non-technical Reading and Fictional Writing
- Playing Basketball, Squash, Skydiving

## REFERENCES

- Dr. Gregory D. Abowd, Associate Professor, Georgia Tech, College of Computing, MC 0280, Atlanta, GA 30332-0280, [abowd@cc.gatech.edu](mailto:abowd@cc.gatech.edu), 404-894-7512

- Dr. Mustaque Ahamad, Associate Professor, Georgia Tech, College of Computing, MC 0280, Atlanta, GA 30332-0280, [mustaq@cc.gatech.edu](mailto:mustaq@cc.gatech.edu), 404-894-2593
- Dr. Terry Winograd, Professor, Stanford University, Computer Science, Gates Computer Science 3B, Room 388, Stanford, CA 94305-9035, [winograd@cs.stanford.edu](mailto:winograd@cs.stanford.edu), 650-723-2780
- Dr. Dan Olsen, Professor and Associate Chair, Computer Science Department – 3366 TMCB, Brigham Young University, Provo, UT 84602, [olsen@cs.byu.edu](mailto:olsen@cs.byu.edu), 801-378-7655
- Dr. Hiroshi Ishii, Associate Professor, MIT Media Laboratory, Room E15-485, 20 Ames Street, Cambridge, MA 02139-4307, [ishii@media.mit.edu](mailto:ishii@media.mit.edu), 617-253-7514
- Dr. Joelle Coutaz, Professor, CLIPS-IMAG, 385 rue de la Bibliotheque, BP 53, 38041 Grenoble, Cedex 9, France, [joelle.coutaz@imag.fr](mailto:joelle.coutaz@imag.fr), 33-4-76-51-4854