

THAD E. STARNER, Ph.D.

Associate Professor of Computing
Georgia Institute of Technology

Expertise: Pattern recognition, human computer interaction, and wearable computing.

Educational Background

B.S.	1991	MIT, Cambridge MA	Computer Science
B.S.	1991	MIT, Cambridge MA	Brain and Cognitive Science
M.S.	1995	MIT Media Laboratory, Cambridge MA	Media Arts and Sciences
Ph.D.	1999	MIT Media Laboratory, Cambridge MA	Media Arts and Sciences

Professional Employment

Associate Professor of Computing, Georgia Tech (Atlanta, GA), 2006-present
Assistant Professor of Computing, Georgia Tech (Atlanta, GA), 1999-2006
Visiting Professor, ECE, Swiss Federal Institute of Technology (ETH) (Zurich, Switzerland),
2002 Research Assistant, MIT Media Laboratory (Cambridge, MA), 1993-1999
Associate Scientist, Speech Systems Group, BBN (Cambridge, MA), 1992-1993

Honors

3 patents granted and 3 patents in process.

Most cited paper on sign language recognition according to Google Scholar and Citeseer.

Nominated by Georgia Tech for the NIH Director's Pioneer Award.

Nominated for Best Paper Award, IEEE ISWC2005. "The Impacts of Limited Visual Feedback on Mobile Text Entry Using the mini-QWERTY and Twiddler Keyboards."

Best Paper Award, IEEE VR2000. "The Perceptive Workbench: Towards Spontaneous and Natural Interaction in Semi-Immersive Virtual Environments."

Named one of MIT Technology Review's top 100 innovators under 35, 1999.

United States Air Force Laboratory Graduate Fellow – 25 chosen of 2031, 1991.

Professional Activities

Co-chair, IEEE Wearable Information Systems Technical Committee, Elected 2006.

Department editor, IEEE Pervasive Computing magazine, 2002-present.

General co-chair, ISWC 2000.

Program committees: ISWC1998, ISWC2003, ISWC2004, ISWC2005, UIST2005, ICMI-PUI2003, ICMI2002, Pervasive Computing2004, ISAR2000, ISMR2001, ISMAR2002, IFAWC2005.

Founder, IEEE International Symposium on Wearable Computers (ISWC), 1997.

Journal reviewer: IEEE Trans. Pattern Analysis and Machine Intelligence, Intl. J. Human Computer Systems, Pattern Recognition Letters, J of Artificial Intelligence Research, IEEE

Trans. On Robotics, ACM Mobile Networking and Applications, IEEE Computer Graphics and Applications, Graphical Models and Image Processing, Presence, Personal and Ubiquitous Computing, IBM Systems J., and Pervasive Computing (magazine).

Selected peer-reviewed publications (in chronological order).

- M. Friedmann, T. Starner, and A. Pentland. "Synchronization in Virtual Realities." *Presence* 1(1), Spring 1991.
- A. Azarbayejani, T. Starner, B. Horowitz, and A. Pentland. "Visually Controlled Graphics." *IEEE Trans. on Pattern Analysis and Machine Intelligence* 15(6), June 1993.
- A. Pentland, T. Starner, N. Etkoff, A. Masoiu, O. Oliyide, and M. Turk, "Experiments with Eigenfaces." *Looking At People Workshop, IJCAI'93, France, August 1993.*
- T. Starner, J. Makhoul, R. Schwartz, and G. Chou. "On-line Cursive Handwriting Recognition Using Speech Recognition Methods." *IEEE ICASSP*, pp. 125-128, April 1994.
- C. Wren, F. Sparacino, A. Azarbayejani, T. Darrell, T. Starner, A. Kotani, C. Chao, M. Hlavac, K. Russell, and A. Pentland. "Perceptive Spaces for Performance and Entertainment: Untethered Interaction Using Computer Vision and Audition." *Applied Artificial Intelligence Journal, Special Issue on Entertainment and AI/Alife*, 1995.
- T. Starner. "Human Powered Wearable Computing." *IBM Systems Journal* 35(3), 1996.
- T. Starner, S. Mann, B. Rhodes, J. Levine, J. Healey, D. Kirsch, R. Picard, and A. Pentland. "Augmented Reality Through Wearable Computing." *Presence* 6(4), Winter 1997.
- T. Starner, J. Weaver, and A. Pentland. "A Wearable Computing Based American Sign Language Recognizer." *Personal Technologies* 1(4), 1997.
- T. Starner, J. Weaver, and A. Pentland. "Real-Time American Sign Language Recognition Using Desk and Wearable Computer-Based Video." *IEEE Trans. on Pattern Analysis and Machine Intelligence* 20(12), December 1998.
- T. Starner and Y. Maguire. "Heat Dissipation in Wearable Computers Aided by Thermal Coupling with the User." *ACM Journal on Mobile Networks and Applications (MONET), Special Issue on Wearable Computers, Volume 4*, 1999.
- B. Leibe, T. Starner, W. Ribarsky, Z. Wartell, D. Krum, J. Weeks, B. Singletary, and L. Hodges. "Towards Spontaneous Interaction with the Perceptive Workbench." *IEEE Computer Graphics and Applications* 20(6), November 2000.
- T. Starner, B. Leibe, D. Minnen, T. Westeyn, A. Hurst, and J. Weeks, "Integration of Wireless Gesture Tracking, Object Tracking, and 3D Reconstruction in the Perceptive Workbench", In *Machine Vision and Applications, Volume 14 (1)*, pp. 59–71, 2003. (Prior version **awarded best paper at VR2000**).
- D. Ashbrook and T. Starner, "Using GPS to Learn Significant Locations and Predict Movement Across Multiple Users", *Personal and Ubiquitous Computing, Volume 7 (1)*, 2003.

- D. Minnen, I. Essa, and T. Starner, "Expectation Grammars: Leveraging High-Level Expectations for Activity Recognition" In IEEE Proceedings of Computer Vision and Pattern Recognition Conference 2003, Madison, Wisconsin, June 2003. pp. II-626–II-632.
- K. Lyons, T. Starner, D. Plaisted, J. Fusia, A. Lyons, A. Drew, and E. Looney. "Twiddler Typing: One-Handed Chording Text Entry for Mobile Phones." CHI, Vienna, Austria, 2004.
- K. Lyons, C. Skeels, T. Starner, C. Snoeck, B. Wong, D. Ashbrook. "Augmenting Conversations Using Dual-Purpose Speech." User Interface and Software Technology (UIST), Santa Fe, NM, November 2004, pp. 237–246.
- S. Lee, V. Henderson, H. Hamilton, T. Starner, H. Brashear, S. Hamilton. "A Gesture-Based American Sign Language Game for Deaf Children." CHI, Portland, Oregon, April 2005. pp. 1589--1592.
- V. Henderson, S. Lee, H. Brashear, H. Hamilton, T. Starner, and S. Hamilton. "Development of an American Sign Language Game for Deaf Children." Interaction Design and Children (IDC), Boulder, CO, June 2005.
- S. Lee, V. Henderson, H. Brashear, T. Starner, S. Hamilton, and H. Hamilton. "User-centered Development of a Gesture-based American Sign Language Game." NTID Instructional Technology and Education of the Deaf Symposium, Rochester, NY, June 2005.
- J. Clawson, K. Lyons, T. Starner, and E. Clarkson. "The Impacts of Limited Visual Feedback on Mobile Text Entry Using the mini-QWERTY and Twiddler Keyboards." ISWC, October 2005. **(Nominated for the best paper award).**
- T. Westeyn, X. Bian, K. Vadas, T. Starner, and G. Abowd. "Recognizing Mimicked Autistic Self-Stimulatory Behaviors Using Hidden Markov Models." ISWC, October 2005.

Published Books and Parts of Books

- A. Pentland, I. Essa, M. Friedman, B. Horowitz, S. Sclaroff, and T. Starner. "The ThingWorld Modeling System." In Algorithms and Parallel VLSI Architectures, E.F. Depretere (editor), Elsevier Press, 1991.
- M. Friedmann, T. Starner, and A. Pentland. "Device Synchronization Using an Optimal Linear Filter." In Virtual Reality Systems, Earnshaw, Gigante, and Jones (editors), Academic Press, 1993.
- T. Starner and A. Pentland. "Real-Time American Sign Language Recognition from Video Using Hidden Markov Models." In Motion-Based Recognition, M. Shah and R. Jain (editors), Kluwer Academic Publishers, Computational Imaging and Vision Series, 1996.
- T. Starner, J. Weaver, and A. Pentland. "A Wearable Computer Based American Sign Language Recognizer." In Assistive Technology and Artificial Intelligence, V. Mittal, H. Yanco, J. Aronis (editors), Springer Verlag, AI Series., 1998.
- B. Schiele, T. Starner, B. Rhodes, B. Clarkson, and A. Pentland. "Situation Aware Computing with Wearable Computers." In Fundamentals of Wearable Computers and Augmented Reality, W. Bareld and T. Caudell (editors), Lawrence Erlbaum Press, 2001.
- T. Starner and J. Paradiso, "Human Generated Power for Mobile Electronics." In Low Power Electronics Design, C. Piguet (editor), CRC Press, 2004.

Selected prior grants as lead principle investigator (in chronological order).

Developing Contextual Cues for Just-in-time Information Retrieval on Wearable Computers

T. Starner

NSF-CAREER Program 2001

Amount Requested: \$549,738, July 2000.

Result: Funded (2/1/2001–2/1/2006)

Telesign

T. Starner and H. Brashear

GVU

Amount Requested: one 9-month GRA (~\$20,000), Sept. 2001.

Result: Funded (10/1/2001–5/1/2002).

Augmenting a Program Manager

T. Starner

DARPA, Cognitive Systems seedling

Amount Requested: \$100,000 October 2002

Result: Funded (2/2003).

Telesign: Towards a One-Way American Sign Language Translator

T. Starner

NSF Universal Access

Amount Requested: \$749,000 over 3 years, December 2004

Result: Funded \$550,001 (4/15/2005–4/15/2008)

Enhancing Tactical Decision-Making in Navy Seal Operations

T. Starner and B. Singletary (Applied Systems Intelligence, Inc.)

Office of Naval Research SBIR

Amount Requested: \$100,000 (GT share: \$30,000+), January 2005.

Result: Funded (5/19/2005–11/19/2005)

GroupWear

T. Starner, A. Pentland, I. Essa, G. Abowd, C. Isbell, E. Price, S. Intille, and H. Lieberman

DARPA IPTO ASSIST

Amount Requested: \$1.99 million over 1 year with options.

Result: Combined with IBM proposal and funded at \$2,169,326 (GT share: \$659,815) over 1 year. \$1,424,235 (\$526,174) 6-month option to be negotiated.

Mobile Gesture Interfaces

T. Starner

ETRI

Amount Requested: \$80,000, August 2005

Result: Funded and extended. Eventual total amount of \$480,000 over 3 years.

Additional Skills:

Conversant in American Sign Language.