Luis von Ahn

Contact Information

Computer Science Department
Carnegie Mellon University

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Professional Employment

2006-Present	Assistant Professor. Computer Science Department, Carnegie Mellon University.
2005-2006	Post-Doctoral Fellow. Computer Science Department, Carnegie Mellon University.

Education

Carnegie Mellon University, Pittsburgh, PA.
Ph.D. in Computer Science, 2005.
Advisor: Manuel Blum
Thesis Title: Human Computation

Carnegie Mellon University. Pittsburgh, PA.
M.S. in Computer Science, May 2003.

Duke University, Durham, NC.
B.S. in Mathematics (Summa Cum Laude), May 2000.

Research Interests

Novel techniques for utilizing the computational abilities of humans, such as games in which people collectively solve large-scale problems that computers cannot yet solve (e.g., http://www.espgame.org, http://www.peekaboom.org); human-computer interaction, artificial intelligence, and the difference in computational abilities between humans and computers (e.g., http://www.captcha.net); theoretical cryptography and security, and computer science theory in general.

Selected Honors

MacArthur Fellow, 2006-2011.

Microsoft New Faculty Fellowship, 2007.

Smithsonian Magazine: America's Top Young Innovators in the Arts and Sciences, 2007.

Technology Review's TR35: Young Innovators Under 35, 2007.

IEEE Intelligent Systems "Ten to Watch for the Future of AI," 2008.

Silicon.com: 50 most influential people in technology, 2007.

Popular Science Magazine Brilliant 10 Scientists of 2006.

Herbert A. Simon Award for Teaching Excellence in Computer Science, Carnegie Mellon University, 2008.

Alan J. Perlis Student Teaching Award, Carnegie Mellon University School of Computer Science, 2006.

Best Doctoral Dissertation Award, Carnegie Mellon University School of Computer Science, 2006.

Summer Internships

Microsoft Research, Redmond, WA. Summer 2004. Worked with Dr. Josh Benaloh investigating techniques to capitalize on human processing power for solving large-scale problems.

IBM T.J. Watson Research Labs, Hawthorne, NY. Summer 2002. Worked under Dr. Tal Rabin in the Cryptography Group on zero knowledge proofs.

University of California, Berkeley. Summer 2001. Worked with Manuel Blum developing CAPTCHAs.

Papers

Luis von Ahn, Ben Maurer, and Colin McMillen. reCAPTCHA: Manual Character Recognition Using Online Security Measures. In submission.

Luis von Ahn and Laura Dabbish. General Techniques for Games with a Purpose. In submission.

Edith Law, **Luis von Ahn**, Roger Dannenberg, and Michael Crawford. TagATune: a Game for Sound and Music Annotation. To appear in *ISMIR 2007*.

Luis von Ahn, Shiry Ginosar, Mihir Kedia and Manuel Blum. Improving Image Search with Phetch. To appear in *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2007*.

Luis von Ahn. Games With A Purpose. In *IEEE Computer Magazine, June 2006.* Pages 96-98.

Luis von Ahn, Andrew Bortz, Nicholas Hopper and Kevin O'Neill. Selectively Traceable Anonymity. In *The 6th Workshop on Privacy Enhancing Technologies, PET 2006.* Pages 208-222.

Luis von Ahn, Ruoran Liu and Manuel Blum. Peekaboom: A Game for Locating Objects in Images. In *ACM Conference on Human Factors in Computing Systems, CHI 2006*. Pages 55-64.

Luis von Ahn, Mihir Kedia and Manuel Blum. Verbosity: A Game for Collecting Common-Sense Knowledge. In *ACM Conference on Human Factors in Computing Systems, CHI Notes 2006*. Pages 75-78.

Luis von Ahn, Shiry Ginosar, Mihir Kedia and Manuel Blum. Improving Accessibility of the Web with a Computer Game. *ACM Conference on Human Factors in Computing Systems, CHI Notes 2006*. Pages 79-82.

Luis von Ahn, Nicholas Hopper and John Langford. Covert Two-Party Computation. In Proceedings of the *Symposium on the Theory of Computing (STOC) 2005*. Pages 513-522.

Luis von Ahn and Nicholas Hopper. Public-Key Steganography. In *Advances in Cryptology, Eurocrypt 2004*. Pages 323-341.

Luis von Ahn and Laura Dabbish. Labeling Images with a Computer Game. In *ACM Conference on Human Factors in Computing Systems, CHI 2004*. Pages 319-326.

Luis von Ahn, Manuel Blum and John Langford. How Lazy Cryptographers do AI. In *Communications of the ACM, February 2004*. Pages 56-60.

Luis von Ahn, Andrew Bortz and Nicholas Hopper. k-Anonymous Message Transmission. In *ACM Conference on Computer and Communications Security, CCS 2003*. Pages 122-130.

Luis von Ahn, Manuel Blum, Nicholas Hopper and John Langford. CAPTCHA: Using Hard AI Problems for Security. In *Advances in Cryptology, Eurocrypt 2003.* Pages 294-311.

Nicholas Hopper, John Langford and **Luis Von Ahn.** Provably Secure Steganography. In *Advances in Cryptology, CRYPTO 2002*. Pages 77-92.

Teaching Experience

Instructor. "Great Theoretical Ideas in Computer Science (15-251)," Spring Semester 2008, Carnegie Mellon University. Enrollment: 185 students.

Instructor. "Great Theoretical Ideas in Computer Science (15-251)," Fall Semester 2007, Carnegie Mellon University. Enrollment: 55 students.

Instructor. "Great Theoretical Ideas in Computer Science (15-251)," Spring Semester 2007, Carnegie Mellon University. Evaluation as instructor from the students: **4.7/5.0.** Enrollment: 175 students.

Instructor. "Great Theoretical Ideas in Computer Science (15-251)," Spring Semester 2006, Carnegie Mellon University. Evaluation as instructor from the students: **4.7/5.0.** Enrollment: 170 students.

Instructor. "Formal Languages, Automata and Computability (15-453)," Fall Semester 2005, Carnegie Mellon University. Evaluation as instructor from the students: **4.9/5.0.** Enrollment: 11 students.

Instructor. "Formal Languages, Automata and Computability (15-453)," Spring Semester 2005, Carnegie Mellon University. Evaluation as instructor from the students: **4.97/5.00.** Enrollment: 28 students.

Teaching Assistant. "Great Theoretical Ideas in Computer Science (15-251)," Spring Semester 2001, Carnegie Mellon University.

Teaching Assistant. "Algorithms (CPS-131)," Spring Semester 2000, Duke University.

Teaching Assistant. "Software Design and Implementation (CPS-108)," Fall Semester 1999, Duke University.

Teaching Assistant. "Abstract Algebra (MTH-121)," Fall Semester 1999, Duke University.

Undergraduate Project/Thesis Supervision

Ben Maurer, Independent Study for Credit. "reCAPTCHA: Stop Spam, Read Books." Spring and Fall 2007, Spring 2008.

Yinmeng Zhang, Research Experience for Undergraduates and Undergraduate Thesis. "Covert Multi-Party Computation." Summer and Fall 2005. (Yinmeng is currently a graduate student in MIT CSAIL.)

Mihir Kedia, Research Experience for Undergraduates. "A Game to Collect Common-Sense Knowledge." Spring, Summer and Fall 2005, Spring 2006. (Mihir is currently a graduate student in MIT CSAIL.)

Shiry Ginosar, Research Experience for Undergraduates. "A Game to Improve Accessibility of the Web." Summer and Fall 2005. (Shiry is currently working as a software engineer at Endeca.)

Roy Liu, Fifth Year Master's Thesis. "A Game to Help Computers Locate Objects in Images." Fall 2004, Spring and Fall 2005. (Roy is currently a graduate student in the computer science department at UCSD.)

Andrew Bortz, Research Experience for Undergraduates and Undergraduate Thesis. "Anonymous Communication." Spring, Summer and Fall of 2003, Spring 2004. (Andrew is currently a graduate student in the computer science department at Stanford.)

Pravir Gupta, Independent Study for Credit. "Understanding CAPTCHA: Completely Automated Turing Test to Tell Computers and Humans Apart."' Fall 2002.

Serkan Aksoz, Independent Study for Credit. "Understanding CAPTCHA: Completely Automated Turing Test to Tell Computers and Humans Apart." Fall 2002.

**** I have supervised 10 other students in different capacities (e.g., as paid assistants) ****

Keynote Talks

"Human Computation." Banquet Speaker at **RSS**. June 2008.

"Human Computation." Banquet Speaker at **NIPS**. December 2007.

"Human Computation." Keynote talk at **K-CAP** (Conference on Knowledge Capture). October 2007.

"Human Computation." Keynote at **NAACL HLT** (Human Language Technology Conference). April 2007.

"The ESP Game and CAPTCHA: Using the Power of Human Cycles." Keynote talk at **IAAI/IJCAI** (International Joint Conferences on Artificial Intelligence). August 2003.

Selected Invited Talks

"Human Computation." Invited Talk at Lawrence Livermore National Labs, May 2008.

"Human Computation." Invited Talk at ICDE, April 2008.

"Human Computation." Computer Science Colloquium at Cornell University, March 2008.

"Human Computation." Invited Talk at Lockheed Martin ITTC Conference, February 2008.

"Human Computation." Distinguished Lecture at Northwestern University, February 2008.

"Human Computation." Distinguished Lecture at the University of Toronto, February 2008.

"Human Computation." Invited Talk at USENIX 2007.

"Human Computation." Invited Talk at HAN University, The Netherlands. March 2007.

"Human Computation." TTI/Vanguard Conference on Identity and Trust. February 2007.

"Human Computation." Distinguished Lecture, Carnegie Mellon University. February 2007.

"Human Computation." Invited talk at the University of Illinois in Chicago. November 2006.

"Human Computation." Invited talk at NASA Goddard Space Flight Center. October 2006.

"Human Computation." Invited talk at the Department of Homeland Security. October 2006.

"Human Computation." Invited Tech talk at Google in Mountain View, CA. July 2006.

"Human Computation." Invited talk at Yahoo! Research. May 2006.

Invited panelist for "Why do Tagging Systems Work?" ACM CHI 2006 Panel. April 2006.

"Human Computation." Invited talk at The University of Texas at Austin. April 2006.

"Human Computation." Invited talk at The Georgia Institute of Technology. April 2006.

"Human Computation." Invited talk at The University of Washington. March 2006.

"Human Computation." Invited talk at Microsoft Research. March 2006.

"Human Computation." Invited talk at The Massachusetts Institute of Technology (EECS). March 2006.

"Human Computation." Invited talk at Stanford University. March 2006.

"Human Computation." Invited talk at The University of Illinois at Urbana-Champaign. March 2006.

"Human Computation." Invited talk at The MIT Media Lab. February 2006.

"Human Computation." Invited talk at The California Institute of Technology. February 2006.

"Human Computation." Invited talk at The University of California, Berkeley. February 2006.

"Social Web Games." Invited talk to the School on Semiotic Dynamics, Language, and Complexity. Erice, Italy. December 2005.

"Covert Two-Party Computation." Invited talk at the Toyota Technological Institute. November 2005.

"ESP: Labeling Images with a Computer Game." Invited talk at Drexel University. May 2005.

"ESP: Labeling Images with a Computer Game." AAAI Spring Symposium. March 2005.

"The ESP Game." Invited talk at Google in Mountain View, CA. December 2004.

"The ESP Game and CAPTCHA." Invited talk at Stanford University. December 2004.

"The ESP Game and CAPTCHA: Using the Power of Human Cycles." Invited talk at the University of Minnesota. October 2004.

"The ESP Game and CAPTCHA: Using the Power of Human Cycles." Microsoft Research. August 2004.

"The ESP Game." Invited talk at the Toyota Technological Institute in Chicago. May 2004.

"CAPTCHA." Invited talk at the University of Montreal. December 2003.

"A Novel Approach to Labeling." Invited talk at the Summer School for Industry, Carnegie Mellon University's Center for Automated Learning and Discovery. June 2003.

"k-Anonymous Message Transmission." Invited talk at ALADDIN Workshop on Privacy. March 2003.

"Provably Secure Steganography." Invited talk at Bell Labs. July 2002.

"CAPTCHA: Telling Humans and Computers Apart Automatically." Invited talk at the Workshop on Human Interactive Proofs, Palo Alto, CA. January 2002.

"CAPTCHA: Telling Humans and Computers Apart Automatically." Invited talk at IBM T.J. Watson Research Labs, NY. December 2001.

Scientific Community Involvement

Invited reviewer for: *IEEE Networks; Theory of Cryptography Conference (TCC) 2003; Symposium for the Theory of Computing (STOC) 2004; EUROCRYPT 2004; CRYPTO 2004; Graphics Interface conference (GI) 2005; CRYPTO 2005; EUROCRYPT 2006; PKC 2006; UBICOMP 2006; CHI 2006; CHI 2008.*

Program Committee Member for the *Workshop on Human Interactive Proofs 2005* and for *WWW 2008*.

Member of DARPA Information Science And Technology Study Group (ISAT).

Publicly Disclosed Patents

Luis von Ahn, Manuel Blum, Benjamin Maurer. Methods and Apparatuses for Controlling Access to Computer Systems and for Annotating Media Files. Filed January 2008.

Luis von Ahn, Ruoran Liu, Manuel Blum, Alexei Efros, Takeo Kanade and Manuela Veloso. Method for Locating Objects in Images using a Computer Game. Filed July 2005.

Luis von Ahn. Method for Labeling Images through a Computer Game. Filed June 24, 2004. United States Patent Application 20050014118.

**** I have two other patent applications which cannot yet be disclosed due to NDAs ****

Selected Press Coverage About My Work

Selected News Articles, TV and Radio Programs about CAPTCHA

- "Spam CAPTCHAs." **The Discovery Channel,** originally aired April 16, 2004.
- "Researchers Battle E-mail Stealing Web Bots with Identity Checks." **The Associated Press,** December, 2002. (Appeared in over 50 newspapers around the world, including **USA Today.**)
- "The CAPTCHA Project." NPR, As It Happens (Radio Show), December 2002.
- "Human or Computer? Take This Test." **The New York Times,** December 10, 2002.
- "Can Hard AI Problems Foil Internet Interlopers?" Society of Industrial and Applied Mathematics News (SIAM News), April 2002.

Selected News Articles and TV Programs about The ESP Game

- "Online Diary: The ESP Game." **The New York Times,** January 15, 2004.
- "The ESP Game Labels Images Online." British Broadcasting Company (**BBC Worldwide**), Click Online TV Show, January, 2004.
- "Teaching Computers to Think." **CNN.com,** October 2003.
- "Researchers Hope to Improve Web Searches." **The Associated Press,** October 2003. (Appeared in over 50 newspapers around the world, including **USA Today.**)
- "CMU Student Taps Brain's Game Skills." Pittsburgh Post Gazette, October 5, 2003.

Selected News Articles about Peekaboom

- "Hide and Peek." **PC Magazine,** October 4, 2005.
- "Guessing Game Gives Machines Clearer Vision." New Scientist, August 9, 2005.
- "Teaching Computers to See with Games." Slashdot, August 4, 2005.
- "CMU Online Game Used to Teach Computers to See." Pittsburgh Post Gazette, August 1, 2005.

Selected News Articles about Phetch

- "Gamers Help The Blind Get The Picture." New Scientist, May 16, 2006.
- "New Game Helps the Blind Access Web Sites." IEEE Computer Magazine News, August 2006.

Selected News Articles reCAPTCHA

- "Weapon against spam enlists computer users to assist the Internet Archive." Pittsburgh Post-Gazette.
- "reCAPTCHA: Stop Spam, Read Books." **NPR News**, May 2007.
- "Researchers Turn Web Blather to Books." **The Associated Press,** May 2007. (Appeared in over 50 newspapers around the world, including **USA Today, CNN.com and the Washington Post.**)

Selected News Articles about Me

- "25 Newly Minted Geniuses." Chicago Tribune, September 19, 2006.
- "Genius, Hard Work, Pay Off." **CBS News**, September 19, 2006.
- "CMU Computer Science Professor Wins $500,000 Genius Award." Pittsburgh Post Gazette, September 18, 2006.
- "CMU Computer Expert Named One of Brilliant 10." Pittsburgh Tribune Review, September 13, 2006.
- "Here Come Science's Best and Brightest: The Brilliant 10." **USA Today**, September 11, 2005.
- "For Certain Tasks, the Cortex Still Beats the CPU." Full feature on **Wired**, July 2007.