

Ido Roll

Human Computer Interaction Institute
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◆ I believe

...that understanding and designing learning opportunities that empower the learner can help people become more curious, capable and innovative learners. A rigor and systematic integration of the science of cognition, the art of education and the engineering of adaptive technologies can best achieve that. My research focuses on understanding how people learn to learn and how such learning can be fostered using intelligent tutoring systems.

◆ Education

PhD candidate at the Human Computer Interaction Institute, Carnegie Mellon University.

Helping students acquire better metacognitive skills bears the promise of promoting future independent learning. In my research I design, implement and evaluate tutoring systems to teach Metacognitive skills (such as monitoring, self regulation, and help seeking), using the successful Cognitive Tutor platform and proven science of learning principles. 2003-present

Student in the Program for Interdisciplinary Education Research (PIER), Carnegie Mellon University. 2004-present

PIER is an interdisciplinary pre-doctoral training program aimed at preparing a new generation of researchers who will be (a) grounded in cutting-edge theories and methodologies in cognitive and developmental psychology, statistics, human-computer interaction and instructional technology; (b) familiar with many of the fundamental problems facing education in America, and (c) committed to applying their skills and knowledge to solving those problems.

M.Sc. in Human Computer Interaction Summer 2008

B.Sc. in Math and Physics, the Hebrew University, Jerusalem, Israel. Spring 1996

Graduation from the Talpiot Program, the Hebrew University, Jerusalem, Israel. Fall, 1995
The Talpiot program qualifies top students for leadership positions in research and development in the academia, industry, and the military research units.

◆ Teaching Experience

Math Teacher, Community Day Middle School. Fall 2007

Co-designing a graduate level course on Educational Game Design with Dr. Vincent Alevan, Eben Myers, Matthew Easterday and Amy Ogan Fall 2006 - Spring 2007

Teaching Assistant for Dr. Vincent Alevan, Cognitive Modeling and Intelligent Tutoring Systems, Carnegie Mellon University. Fall 2005

Teaching Assistant for Dr. Richard Scheines, The History of Arab Israeli Relations, Carnegie Mellon University. Spring 2005

Teaching Assistant for Dr. Vincent Aleven, the Pittsburgh Science of Learning Center Summer School. Summers of 2005, 2006, 2008

AP Math teacher, the after school gifted children program of Lod, Israel. 2002-2003

GRE and GMAT Math teacher, GMAX Inc., Israel. 2002-2003

♦ Academic Service

Co-chair of the Workshop on Metacognition and Self-Regulated Learning in Educational Technologies (in conjunction with the International Conference on Intelligent Tutoring Systems, Montreal, Canada) 2008

Co-chair of the inter-Science of Learning Center Students and Post-docs Conference, Pittsburgh PA 2008

Co-chair of the Workshop on Metacognition and Self-Regulated Learning in Intelligent Tutoring Systems (in conjunction with the 13th International Conference on Artificial Intelligence in Education, L.A., CA) 2007

Student representative to the Pittsburgh Science of Learning Center executive committee 2007

A member of the inter-Science of Learning Centers graduate-students and post-docs management team 2006-current

A member of the Student Leadership Team of the Pittsburgh Learning-Sciences Students 2006-2007

Coordinator of the HCI PhD lunch seminar. 2004-2005

♦ Selected Professional Experience

Human Factors Engineer, The Israeli Air Force and the Israeli Ministry of Defense. 1995-1998; 1999-2003

A tutor and commander of the senior year in the Talpiot Program for R&D Leadership, The Hebrew University, Jerusalem, Israel. 1998-1999

♦ Social Justice Activism

Founder and co-president of Middle Peace – a joint Arab-Israeli student organization. 2005-2007

Executive Committee member of the Middle East Peace Forum of Pittsburgh. 2004-2006

Executive Committee member of Peace Generation Tel-Aviv Branch. 1998-2000

Active volunteering in different frameworks. 1990-current

♦ Grants

Pittsburgh Science of Learning Center Project Award. LABGEBRA: Deciphering Invention as Preparation for Future. Ido Roll, Vincent Alevan, Kenneth Koedinger, Daniel L. Schwartz. September 2007 – September 2009. \$173,033

National Science Foundations, award #0751038, First Annual Inter-Science of Learning Center (iSLC) Student/Post-doc Summer Conference. Kenneth Koedinger, Julie Booth, Robert Hausmann, and Ido roll. September 2007. \$96,499

Pittsburgh Science of Learning Center Project Award. Operation Application Rerification. Yvonne Kao, Ido Roll, Kenneth Koedinger. September 2006 – September 2007. \$108,404

♦ Awards

Best Paper award, the International Conference on Intelligent Tutoring Systems Jhongli, Taiwan. 2006

Finalist for Best Paper by Student First Author award, the International Conference on Intelligent Tutoring Systems, Jhongli, Taiwan. 2006

Finalist for Best Paper by Student First Author award, User Modeling, Edinburgh, UK. 2005

Best Paper award, the International Conference on Intelligent Tutoring Systems Maceio, Brazil. 2004

Excelling Officer, the Research and Development Department, the Israeli Air-Force. 2000

♦ Publications

Journal papers

Baker, R., Corbett, A., Roll, I., & Koedinger, K. (to appear) Developing a generalizable detector of when students game the system. *User Modeling and User-Adapted Interaction*.

Baker, R., Walonoski, J., Heffernan, N., Roll, I., Corbett, A., & Koedinger, K. R. (2008). Why Students Engage in "Gaming the System" Behavior in Interactive Learning Environments. *Journal of Interactive Learning Research*, 19(2), 185-224

Roll, I., Alevan, V., McLaren, B. M., & Koedinger, K. R. (2007). Designing for metacognition - applying cognitive tutor principles to the tutoring of help seeking. *Metacognition and Learning*, 2(2), 125-40.

Alevan, V., McLaren, B.M., Roll, I., & Koedinger, K.R. (2006). Toward meta-cognitive tutoring: A model of help seeking with a Cognitive Tutor. *International Journal of Artificial Intelligence in Education*(16), 101-30

Strictly refereed conference full papers

Roll, I., Alevan, V., McLaren, B. M., & Koedinger, K. R. (2007). Can help seeking be tutored? Searching for the secret sauce of metacognitive tutoring. *International Conference on Artificial Intelligence in Education*, 203-10.

Kao, Y. S., Roll, I., & Koedinger, K. R. (2007). Sources of Difficulty in Multi-Step Geometry Area Problems. *Cognitive Science Society Annual Meeting*,

Roll, I., Alevan, V., McLaren, B.M., Ryu, E., Baker, R.S., & Koedinger, K.R. (2006) The Help Tutor: Does Metacognitive Feedback Improves Students' Help-Seeking Actions, Skills and

Learning? in *proceedings of 8th International Conference on Intelligent Tutoring Systems*, 360-9. Berlin: Springer Verlag.

Baker, R.S.J.d., Corbett, A.T., Koedinger, K.R., & Roll, I. (2006) Generalizing Detection of Gaming the System Across a Tutoring Curriculum. in *proceedings of 8th International Conference on Intelligent Tutoring Systems*, 402-11. Berlin: Springer Verlag.

Baker, R.S.J.d., Corbett, A.T., Koedinger, K.R., Evenson, E., Roll, I., Wagner, A.Z., Naim, M., Raspat, J., Baker, D.J., & Beck, J. (2006) Adapting to When Students Game an Intelligent Tutoring System. in *proceedings of 8th International Conference on Intelligent Tutoring Systems*, 392-401. Berlin: Springer Verlag.

Roll, I., Baker, R.S., Aleven, V., McLaren, B.M., & Koedinger, K.R. (2005) Modeling Students' Metacognitive Errors in Two Intelligent Tutoring Systems. in *proceedings of User Modeling 2005*, 379-88. Berlin: Springer-Verlag.

Aleven, V., Roll, I., McLaren, B.M., Ryu, E.J., & Koedinger, K.R. (2005) An architecture to combine meta-cognitive and cognitive tutoring: Pilot testing the Help Tutor. in *proceedings of 12th International Conference on Artificial Intelligence in Education (AIED 2005)*, Amsterdam, The Netherlands: IOS press.

Baker, R.S., Roll, I., Corbett, A.T., & Koedinger, K.R. (2005) Do Performance Goals Lead Students to Game the System? in *proceedings of 12th International Conference on Artificial Intelligence in Education*, 57-64. Amsterdam, The Netherlands: IOS Press.

Aleven, V., McLaren, B.M., Roll, I., & Koedinger, K.R. (2004) Toward tutoring help seeking - Applying cognitive modeling to meta-cognitive skills . in *proceedings of 7th Conference on Intelligent Tutoring Systems*, 227-39. Berlin: Springer-Verlag.

Conference short papers and workshop papers

Roll, I., Aleven, V., & Koedinger, K. R. (2008). Designing Structured Invention Tasks to Prepare for Future Learning [Abstract]. *Proceedings of the 30th Annual Conference of the Cognitive Science Society*, 2394.

Koedinger, K.R., Aleven, V., Baker, R.S.J.d., and Roll, Ido (2007). Toward Understanding When Tutoring Meta-cognition Enhances Domain Learning. in *proceedings of the Workshop for Metacognition and Self-Regulated Learning in Intelligent Tutoring Systems*. L.A., CA

Roll, I., Ryu, E., Sewall, J., Leber, B., McLaren, B.M., Aleven, V., & Koedinger, K.R. (2006) Towards Teaching Metacognition: Supporting Spontaneous Self-Assessment. in *proceedings of 8th International Conference on Intelligent Tutoring Systems*, 738-40. Berlin: Springer Verlag.

Baker, R.S., Corbett, A.T., Koedinger, K.R., & Roll, I. (2005) Detecting When Students Game The System, Across Tutor Subjects and Classroom Cohorts. in *proceedings of User Modeling 2005*, 220-4. Berlin: Springer-Verlag.

Roll, I., Aleven, V., & Koedinger, K.R. (2004) Promoting Effective Help-Seeking Behavior through Declarative Instruction. in *proceedings of 7th Conference on Intelligent Tutoring Systems*, 857-9. Berlin: Springer-Verlag.

Roll, I., Baker, R.S., Aleven, V., & Koedinger, K.R. (2004) What goals do students have when choosing the actions they perform? in *proceedings of 6th International Conference on Cognitive Modeling*, 380-1. Mahwah, NJ: Lawrence Erlbaum.

Roll, I., Baker, R.S., Aleven, V., & Koedinger, K.R. (2004) A Metacognitive ACT-R Model of Students' Learning Strategies in Intelligent Tutoring Systems. in *proceedings of 7th Conference on Intelligent Tutoring Systems*, 854-6. Berlin: Springer-Verlag.