“Simulated Student as Promising Methodology to Advance Theories of Learning”

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Abstract
SimStudent is a computational model of learning that inductively learns procedural rules to solve problems from examples and through tutored-problem solving. In this talk, I will demonstrate SimStudent’s ability to make a contribution to the sciences of learning and advance cognitive theories of learning and teaching in three research areas: (1) intelligent authoring where SimStudent allows users to create an expert model for a cognitive tutor by tutoring SimStudent, (2) student modeling where SimStudent allows researchers to run simulations to understand how students learn (and fail to learn), and (3) learning by teaching where SimStudent functions as a teachable agent that helps students learn by teaching. I will also discuss future directions of SimStudent (broader applications and research opportunities) and simulated learners in general.

Biographical Note
Noboru Matsuda is research faculty at the Human-Computer Interaction Institute at Carnegie Mellon University. Noboru's research interests include applications of cutting-edge technologies to enhance learning as well as to advance cognitive theories in the sciences of learning. Noboru received an MS in Math Education from Tokyo Gakugei University (Tokyo, Japan) and a Ph.D in Intelligent Systems from the University of Pittsburgh. Noboru has developed a number of intelligent tutoring systems in math (arithmetic, geometry theorem proving and algebra equations), C language, and the formal specification language Z. Noboru initially started the SimStudent project as an application of machine learning for intelligent authoring (www.SimStudent.org) when he came to CMU in 2004 for his postdoctoral training. He has since expanded the project into multiple applications including recent contributions to advancing the theory of learning by teaching and student modeling. Noboru loves programming and swimming when he is not dreaming of the future of education.