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Abstract for an Invited Paper for the SES07 Meeting of the American Physical Society

## An Intelligent Tutoring System for Conceptual Physics<sup>1</sup> DONALD R. FRANCESCHETTI, The University of Memphis

AutoTutor is an intelligent tutoring system (ITS) in which students can learn a variety of subjects through conversation in natural language with a software agent. The agent appears as a face on the screen, with a synthesized voice, and responds to typed input from the student. Student understanding is modeled from student responses, which are matched to high quality essay responses and known misconceptions and bad answers using one of several computational linguistic techniques. With ONR and NSF support a version of AutoTutor covering Newtonian dynamics at the level of Hewitt's Conceptual Physics has been developed and extensively tested. As a byproduct of this work, several thousand student responses to a small number of conceptual physics questions have been collated and mined for misconceptions. Recent work has allowed a comparison of latent semantic analysis and inverse word frequency measures of text match with expert answers. Some results from this process will be presented along with a demonstration of AutoTutor-Physics at work.

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