PRINCETON ACM / IEEE-CS CHAPTERS
DECEMBER 2024 JOINT MEETING

How are you feeling? Improving Social Emotional Learning through AI-powered Tutoring

Emotion has a substantial influence on learning, attention, memory, and problem solving. This talk describes artificial intelligence tools that are designed to detect emotion, provide one-on-one assistance during online learning, and adjust their responses to each student's learning level.

In these AI-powered tutoring systems, the generated problems are customized with the goal of motivating students and advancing learning. Inferences about student knowledge are derived from predictive learning models by observing the students' faces, gestures, and emotions. The system can make decisions about the next best intervention (e.g., provide video, reduce difficulty of math problem).

These tutoring systems can:

1. Perform continuous assessment and they can sleuth the students' responses to address student performance and emotion in real-time.
2. Create computer-generated synthetic partners and personalized video content. For example, the tools will shortly be able to generate special computational characters. These generated characters may perhaps work more efficiently than do human tutors.
3. Create avatars to answer student queries, provide explanations, assist in problem solving and teach about social awareness and relationship skills.

Cross-modal generative AI will provide ChatGPT-4 responses including hints, explanations, data-driven insights and recommendations. Understanding the role that emotions play in learning and teaching has supported the design and deployment of more effective online tools and learning experiences. This talk will identify the differential impact of AI tutors on student achievement, self-efficacy, and social emotional learning.

Dr. Beverly Woolf is a Research Professor in the College of Information and Computer Sciences, UMass-Amherst. Her team has worked with hundreds of students and dozens of teachers to evaluate online K12 teaching platforms. The team has developed tutors for education and industry and in a variety of disciplines (e.g., chemistry, psychology, and mathematics). Dr. Woolf published the book ***Building Intelligent Interactive Tutors***, over 250 articles and was lead author on the NSF report Roadmap to Education Technology in which forty experts and visionaries identified the next big computing ideas for education. Dr. Woolf is a Fellow of the Association for the Advancement of Artificial Intelligence and served as PI on numerous NSF and U.S. Dept. of Education awards.

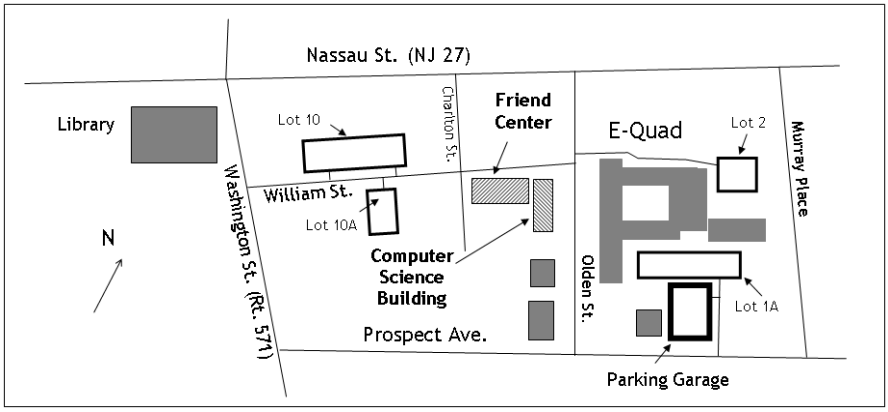
Date: Thursday, December 5, 2024, 8:00pm EST
Place: **HYBRID MEETING** (both in-person and online)
In Person: Princeton University Computer Science Building
Small Auditorium, Room CS 105
35 Olden Street, Princeton NJ
How to register for the online meeting:

- Send email to **PrincetonACM@gmail.com**
- OR Register on **Meetup.com**
(**http://meetup.com/IEEE-Princeton-Central-Jersey-Section**)

Information: Dennis Mancl (908) 285-1066
On-line info: **http://PrincetonACM.acm.org**

All Princeton ACM / IEEE Computer Society meetings are open to the public. Students and their parents are welcome. There is no admission charge, and refreshments are served.

A pre-meeting dinner is held at 5:45 p.m. at Applebee's (3330 US 1, Lawrenceville, near Quakerbridge Mall). Please send email to **princetonacm@gmail.com** in advance if you plan to attend the dinner.



Parking: After 4pm on weekdays, public parking is permitted in most of the university parking lots near the Computer Science Building.

See the Visitor Parking link on the Princeton Transportantion website, **http://www.princeton.edu/transportation/visitors.html**, for a summary of Princeton's policies.

On-street parking on Olden, William, and Charlton requires paying the electronic meters until 8pm.