**Project 10 – HCI – Tutor Research**

Client: Vincent Aleven ([aleven@cs.cmu.edu](mailto:aleven@cs.cmu.edu)), Human-Computer Interaction Institute, Carnegie Mellon University

Project Abstract:

The purpose of this project is to investigate whether prerequisite relations among math topics can be detected in standard longitudinal log data from tutors.

Given a math "topic" or skill or unit, what math topics or skills or units do you need to master in order to (smoothly) learn that topic or skill or unit? The main idea would be to treat correlations between performance/learning on some tutor units, or on certain skills, as evidence of prerequisite relations.

The data may not be ideal for answering the question. Students will use data from the standard curricular sequence. There are questions of what metrics to use (large space of possibilities, including AFM-derived measures) and at what level to look for prerequisite relations (units? skills? topics? problem types?) that need to addressed with stakeholders.

The data set used will likely be regarding middle school mathematics, however, the team will be tasked with validating whether or not the approach would generalize. These investigations could become a foundation of "adaptive practice of prior knowledge."