SEMESTER PAPER ASSIGNMENT
ADAPTIVE LEARNING
PROFESSOR RYAN BAKER

For the semester paper, you will select a type of adaptivity OR type of measurement used in adaptivity that is or could be used in adaptive learning systems. You will write a paper on this topic.

This paper should represent a comprehensive discussion of the form of adaptivity or measurement, its history of research in the field, how it has been used in practice (if at all), key differences in different variants of this technology, key findings, and key open questions or challenges needed to be addressed for this form of adaptivity to make its maximal positive impact on learner outcomes.

Note that although you must select an automated form of adaptivity (i.e. not human adaptation, such as teachers switching to a new pedagogy for a non-adaptive learning system), the adaptivity does not need to be student-facing (i.e. adaptive support for teachers or parents is acceptable).

It is not recommended to select a technology or approach that is entirely speculative and has never been used in any fashion. However, technologies used in large-scale simulation studies or multiple lab pilots are acceptable.

After you post your semester paper, your classmates (and I) will comment on your paper and ask questions, and you will lead a discussion of the topic in the discussion forum. You will also comment on other students' papers.

PART ONE: SUBMIT A TOPIC PROSPECTUS
DUE DATE: JULY 12, 1159PM USA EASTERN TIME

In this prospectus, you will propose a topic, which the instructor will review and give you feedback on the suitability of your topic.

Your prospectus should clearly state the nature of the adaptivity you are studying, in at most a brief paragraph. Provide only enough detail so that it is clear what you are referring to. For example, "student modeling" is not enough detail; "student knowledge modeling" is probably enough detail but too broad a topic; "Bayesian Knowledge Tracing" would be perfect. (As a note, "Bayesian Knowledge Tracing" is probably not the best topic, though, given that it is probably the most-studied algorithm in the history of the field – you would have to write a long paper to comprehensively cover it!).

You have the option of including a brief outline of your planned article or topics you plan to cover, but this is not required.

Please submit this prospectus through JeepyTA, with the "Assignment 2" tag.

PART TWO: WRITE YOUR PAPER
DUE DATE: AUGUST 1, 1159PM USA EASTERN TIME

Write a paper, at least 2500 words long (not counting references). There is no maximum length for this assignment (but be reasonable). You should have a references section at the end (the references do not count as part of your 5 pages). Citations and references can be in any common format (APA or ACM are acceptable, for instance).

This paper should represent a comprehensive discussion of the form of adaptivity or measurement, its history of research in the field, how it has been used in practice (if at all), key differences in different variants of this technology, key findings, and key open questions or challenges needed to be addressed for this form of adaptivity to make its maximal positive impact on learner outcomes.

Here are a few questions you could consider. It is not required to answer all of them.

- **What are the goals?**
  Why is this type of adaptive learning technology worth developing?
  What would it accomplish if it worked?
  How would it make education better (not necessarily just in terms of improved learning)?
  How will it impact education as a system?

- **How does it work?**
  How does the adaptive learning technology within your topic function to achieve its goals?
  Does it simulate some instructional/learning behavior?
  Does it simulate some capacity that human teachers/tutors/peers have?
  Do different variants of this technology function differently in important ways?

- **Does it work?**
  Right now, is this technology meeting its potential?
  In what ways is it failing or succeeding?
  How do we know/how would we know if it is achieving its goals?

- **Progress and going forward**
  What are the debates and controversies, if any?
  What are the challenges, and open questions for research and development?

Please post your essay to JeepyTA, with the "Assignment 3" tag

PART THREE: RESPOND TO YOUR CLASSMATES' POSTS
DUE DATE: AUGUST 4, 1159PM USA EASTERN TIME

You are expected to provide substantive comments several lines long on at least three other students' semester papers. Your comments should be targeted towards the content of the review (and the technology/approach it describes) rather than on the presentation or grammar or writing quality, etc. Your posts must offer a critical and meaningful perspective on the topic. (i.e. "Bayesian Knowledge Tracing is COOOOOOL" is not sufficient, and it's no longer 1995 anyways).

Your response posts will count for 9 percentage points of the total grade for your semester paper (i.e. 9% of your final grade for the class), so please take this seriously.

PART FOUR (OPTIONAL): REVISE PAPER
DUE DATE: DUE AUGUST 7, 1159PM USA EASTERN

You have the option of revising your paper based on the feedback you receive from your classmates and JeepyTA. Please note that you may still be penalized for not complying with assignment requirements (such as not including a required area of description) even if neither JeepyTA nor your classmates comment on it. JeepyTA is set up to give you feedback on your ideas, not feedback on your degree of compliance with assignment requirements.

The paper that is in JeepyTA on August 7, 1159pm USA Eastern will be the version that is graded, whether it is your original submission or a revised submission. I apologize for the short timetable on this, this summer semester, Penn GSE registrar is requiring that grades be submitted on the same day as the official last day of class!