Randomly ordered subset of the projects presented in prior classes

- How to take good pictures. Tutor displayed pictures and ask what's wrong. Student must give correct answer in order to go on. Not step-based although could be because asked for focal distance, exposure and shutter speed.

- C++ tutor. The student who did this project is a grader for C++ class. He built tutor in MS XNA studio 3.1, which is a game authoring system. The tutor can choose lessons for the student. It chooses lesson for which the student has the least mastery. Tutor has 25 lessons! Each task is to generate 1 to 3 lines of C++ code. Has boxes for each part. 30 second timeout for giving hints. Disables 20 s before BO hint to prevent gaming. Tutor recognizes common bugs e.g., capitalization mistakes. Authoring consists of giving correct solution and hints. Generates boxes itself.

- Sudoku tutor. Choose topology of puzzle. There are only two knowledge components: (1) If all numbers except one are used, then use the last. (2) If 2 out of 3 rows/columns/etc. have an N in them, then must put N in the 3rd. Unordered steps. Just fill in boxes; red/green. Test version does not give feedback.

- Tutors students on how to enter mathematical expressions in Latex. Uses type-in boxes for each symbol e.g., $3-5=-2$ is entered with 7 boxes.

- Teaches students how to do prime factorization: Give a number, lists its prime factors, and for each one, give the number of times it occurs e.g., 24 = (2^2)*(3^2).

- How to make perfect afternoon tea. Simplified version of tea ceremony. Each step is presented as a frame with a photo or diagram.

- GMAT admission test tutor. Questions from Princeton Review website. Built with Captivate 4. Plays video of author explaining how to do a problem. If student gets it wrong, then get fancy help, then continue gives steps.

- Sudoku tutor. Hints and incorrect entries subtract from points. When there are multiple "legal" values, then only gives positive feedback on the correct one. Hints specify a cell to fill next, but hint the value to enter into it.

- Fraction addition tutor, but focuses on problem generation and task selection. Implemented mastery learning. When asks for bottom out hint, then next problem starts there. Randomly generates the given numbers which fits in the text. System solves the problem itself. Mastery learning if do 5 or more problems, and get 85% of the points

- Step-based tutor for java coding. Uses buttons to enter steps, followed by forms. For example, the form for a loop has blanks for the variable, the increment, the starting value, the final value, and the body.

- Tutor for constructing CSS (cascading style sheets). Example-tracing. Given HTML code with blanks, student fills in the blanks.

- Origami tutor. Displays folding diagram, and student clicks on what fold to do next. Example-tracing.
- Answer-based tutoring system for teaching GRE vocabulary. Used WorldNet for synonyms and antonyms. Used Wiktionary for definitions of words. Focused on assessment and adaptive task selection. Use a non-Bayesian update for the student model.
- Step-based algebra word problem tutoring system. Students create equations by sliding tiles from word problem to workspace, then sliding tiles from math palette to workspace.
- Step-based calculus tutoring system that covers basic rules for derivatives: powers, constants, products.
- Chinese cooking tutor. Student choose ingredients from menu, then chooses preparation methods from menus. Heuristics generate advice e.g., don't boil beef.
- Tutoring system for drawing a graph given either a linked list or an adjacency matrix.
- Tutoring system for answer-set prolog (ASP) programming. Students typed in ASP code. Fancy string matcher.
- Tutor for using websites. Example-based. Works with any website using OTAT (a transparent layer on top of the website). Author records correct sequence of gestures. Student tries to generate same sequence. Asking for a hint causes tutor to highlight the widget that needs to be actuated.