Review of Usability

1) The AI / Physics Engine

   Search Space Techniques,

   Automated Reasoning

2) Human Visual System

Final,

Usability definition, requirement setting testing, evaluation and pinpoint analysis will be included.

Material covered after the material that was used for the midterm OGL, and QT at the level of homework.

Parts of (1) and (~2) above better explained by tomorrow or Wednesday. Format will be finalized tonight.

Midterm (Rubric)

1) In Question

Extra Credit for course, or instructor evaluation

Two assignments posted only one (of your choice) will qualify for extra credit.

Goal is to increase participation in order to obtain larger sample and more admissible results

Assignment I3 – no need to connect widgets to Graphics. Modify the CG window, add a plot of a function. Two screenshots one before rotation and one after.
In I3- its extra credit

Use glPerspective() instead of glOrtho(). You will have to get a better understanding of the resultant view volume (less intuitive) may need to use trial and error.

Assignment I4 – Connect widgets to Graphics (potentially add light sources)
Submit several screenshots showing the interaction
In I4 it is required

The AI Engine

The AI Engine provides a “realism” into the interaction in games, AR, and VR.
Change the user experience through operations initiated by the machine
Prompting the user for actions, responding to user actions.
Can also be system dynamics that is aimed to improve usability.
The Physics engine is similar in the way that it is supposed to add “realism” related to the way object interact WRT to the laws of Physics.

Can also be system dynamics that is aimed to improve usability.

For example, ordering widgets in a way that would reduce the user effort based on specific user interaction.

Formal methods in AI,

Inference (deduction, automated reasoning, other models e.g., Markov models)
Searching in a search space.

Searching in a search space.

Assume that the user (machine) is trying to solve a problem. Often the solution involves moving from one state to another. States might be associated with cost/reward.
Example, cost of getting to a state, distance from solution, quality of solution.

Generally, the states (the search space – can be abstract) are generated along with the search. We generate only a part of the stat pace that is relevant for looking for the solution(e.g., action by the system/user). Search tree, we might be constructing the tree as we search.

Terminology / consideration

Soundness – following the rule (e.g., logic) – if a solution is found it must be a valid solution found using the right procedure
Completeness – If there is a solution there must be a way to find it (find all the solutions)
Complexity (time/space)
Optimality – how close can the search get to the optimal solution
Amount of information available
Amount of information used informed vs. uninformed search

Uninformed search

The search performed is done without regards to possible information. The goal is to find certain states (goal states).

State (search) space is basically a directed/nondirected **graph** in the notation of mathematical graph theory.

States are vertices and weighted edges might connect vertices. Might denote the path or trajectory from one state to another.

The search might construct and traverse a part of the graph.
Traversing a graph introduces a problem??? A graph might contain loops
What to do? Use acyclic graph (Forest) Connected ➔ tree
We prefer a state space that is a tee otherwise need to make sure that we avoid loops.
A tree is an acyclic connected graph