* 1. See attached transcript, at bottom.
  2. I was pretty certain I was speaking with a bot by the third response, after two of my own responses. I said that it was nice to meet Rosette, and she said “Are you pulling my leg?”, which makes no logical sense at all. I was absolutely certain by the next statement, when she asked if I had “been in this state for long.” ‘State’ is an improper term in this circumstance, and not how a human would generally structure a response.
  3. I don’t see any problem with the Loebner prize, in terms of its intended purpose. Shieber argues that the contest is extremely restricted and prohibitive, and doesn’t prove any worth of the Turing test or the prize due to these restrictions. He also argues that the test is too difficult to implement with current technology, and that only contests on the edge of modern technology have any producible payoff. This logic is flawed, because if research were only conducted on modern fields and their related areas, revolutions in technology would never occur. The only reason the US made it to the moon in 1969 is because Kennedy proposed the impossible 1961. People had to scramble, ideas had to be quickly generated, and money had to be dumped into projects that succeeded and failed, but without this risk, the moon landing would have been impossible. The restrictions act as the ‘modern’ guide in this case, keeping the test possible and not prohibitively hard for modern competition, while still pushing the envelope to attain revolutionary results. In Loebner’s defense, he saw a gap in current technology and attempted to fill it. He is devoting his time, money, and efforts toward the advancement of the AI field, and while his efforts might retrospectively be seen as irrelevant, the prize he offers can only advance the field, rather than harm it. As both authors argue, the prize offers publicity and public support to the field and the Turing test, which can also only serve to benefit the field. In short, Shieber’s arguments are flawed, and Loebner’s actions can do no harm, so the prize is at worst irrelevant, and at best a critical catalyst for the AI field.
     1. I think the definition of intelligence is closely tied to learning, so I would design a competition based on this association. I would have human participants perform a series of increasingly challenging actions, such as rolling dice, shuffling a deck of cards, whittling a piece of wood, etc. The participants would have to take in this action, then attempt to reproduce it to the best of their abilities. The actions would likely have to be extremely simple, even simpler than the ones I described, due to the limitations of mechanical components, but nonetheless demonstrative. The objectives of this competition would be twofold: to further the AI field through machine learning techniques and information processing, and to make advances in mechanics and autonomy for robotics. The scoring criteria would be based on a small set of human judges, who would award scores (perhaps in a 1-10, Olympic-style fashion) based on how well they believed the machine performed the task. The machine with the highest aggregate score would be awarded the prize. The rules would include that entrants must not have memorized any simple actions (perhaps through a memory wipe at the beginning of the competition), so that all actions were actually based on learning. Anyone is free to submit an entrant, and there are no mechanical or budgetary constraints. Entrants are also allowed to view an action multiple times to gather information, but they are not allowed to view other entrants performing the task.
     2. This contest is preferable to the Loebner prize because it demonstrates actual intelligence, and also advances the hardware and software sides of AI, rather than purely the software side. Since the machines would have to be able to “learn”, in some sense of the word, they are actually processing information, adapting past experiences, and trying new strategies. Compare this to the Loebner prize, which, by Searle’s argument, simply regurgitates database information based on syntax rules, rather than adapting information or evolving a process in some manner. Also, the mechanical benefits could have interesting applications in non-CS fields, like medicine, giving this test another clear advantage over the Loebner prize.
     3. In this case, a state is any assignment or mapping of classes to rooms, whether or not this assignment is valid.
     4. The operators in this case are removing an assignment of a class to a room, creating an assignment of a class to a room, and combining these operations to switch to class-room assignments.
     5. The start state is the current class-to-room assignment we received from the registrar’s office.
     6. The goal test is determining if, for all classes offered for the quarter, a valid class-to-room assignment exists (using the given definition of valid).
  4. The specification of this problem does require an optimal search procedure, because the assignment is supposed to use the smallest number of changes possible. Optimality is defined as a least-cost solution, so it is required in this case.
  5. In this case, I’m assuming that a tree is built that contains valid, single transformations from one node to another. In this case, the maximum branching factor is the number of possible pairs to swap in the set of classes, or C choose 2. This is because, under my assumption, you can permute the class structure at each stage by swapping exactly one pair of classes, so that 1 2 3 can become 2 1 3, 1 3 2, or 3 2 1.
  6. Iterative deepening search runs in O(bd) time, where b is the maximum branching factor, and d is the depth. D can be set at runtime, so an exact answer cannot be given. However, substituting for b, the complexity is O((C choose 2)d).
  7. Duplicate states can and likely will exist in this scenario. For example, if the set 1 2 3 is used, swapping to 2 1 3, then swapping again, can produce 2 3 1 and 3 1 2 as possible orderings (assume that the order of R is fixed). However, swapping in the first state to 1 3 2 then swapping again also yields 2 3 1 and 3 1 2.
  8. Let W be the number of classes that are incorrectly assigned. It is possible that no more than W / 2 swaps will be required, as W / 2 swaps will likely swap all the given C exactly one time. Thus, I would use W / 2 depth as a heuristic, as it is possible that a solution exists at this depth. This heuristic is admissible because it would be impossible for a solution to exist below this depth, since not enough swaps could have yet been made.
  9. Using depth-first search, you could return the correct solution to this problem with less expansions than A\* search. Consider the following: the classes are ordered AB\_, but A can only exist in B’s room, but B is valid in its current room. The tree could contain BA\_, B\_A, and \_BA, where “\_” denotes an empty room in an empty room. A\* search might evaluate the B\_A, if ties are arbitrarily broken in the “middle” of the search tree. DFS, on the other hand, would expand only the left, goal state, and reach the solution more quickly. A\* search would require the expansion of B\_A, then either BA\_ or \_BA, expanding one more node than DFS.

Transcript:

Rosette: Good afternoon. My name is Rozette. What is your name?

You: My name is Josiah

Rosette: Nice to meet you, Josiah.

You: It's nice to meet you as well, Rosette

Rosette: Are you pulling my leg? So, what do you do for a living?

You: I'm a student at Northwestern University in Computer Science

Rosette: Is this a state you have been in for a long time?

You: I have been in Computer Science for 3 years now.

Rosette: I wouldn't have thought that about you. Do you live around here?

You: I live in Evanston, Illinois

Rosette: I live in my godmother's house in South Park, San Francisco.

You: Oh, that's cool. I've always wanted to go to San Francisco.

Rosette: Maybe someday you will get to go there.

You: I hope I shall.

Rosette: Hope is good. It distracts the masses from action.