RD02 Response

4/10/24

**Summarize what relationship the author is trying to convey regarding information processing behaviors and uncertainty. More specifically, note why a human or machine may be better suited for a certain category-task (skills, rules, knowledge, expertise).**

The author of this article, Mary Cummings, is trying to build a map to relate information processing behaviors to increasingly complex tasks. She starts with Jens Rasmussen’s taxonomy of behaviors which proceeds as follows: skill-based behaviors -> rule-based behaviors -> knowledge-based behaviors -> expertise-based behaviors. This taxonomy moves from the type of behavior that is easiest to automate (skill) to the type of behavior that is the most difficult to automate (expertise). Cummings says that we can also think about uncertainty in regard to this taxonomy. Skill-based tasks (defined in this article as automatic, sensory-motor responses) have the least amount of uncertainty, and are best suited to be completed by machines. On the other hand, tasks that rely on knowledge and expertise have a high amount of uncertainty, therefore requiring complex cognitive analysis of all the variables at hand before producing a response. Knowledge and expertise-based tasks are therefore better suited for humans.

The article often uses pilots, and the task of flying a plane as an example. Highly automated, skill-based tasks, such as consistently keeping an aircraft at a steady altitude and speed, are performed best by machines (autopilot) because machines are able to remain consistent indefinitely. Humans are only able to remain truly vigilant for an average of 20-30 minutes at a time. We are also affected by sleep deprivation, hunger, and mood. However, the human power of judgment and cognitive reasoning is necessary in situations that lack certainty. When multiple things are going wrong on an airplane (engines failing, incorrect sensor information, etc.) the pilot needs to be able to use expertise and knowledge to keep the plane from crashing.

**Name 3 technologies you may use in your daily life and attribute an LOA to each. Please explain the reasoning behind each rating.**

1. My Car

I give my car a level 1 automation level. She was made in 2012, and does not have any self-driving abilities. All of my driving decisions and actions are made my me, with no help from my car. My car does have sensors, and will beep if I get too close to things, or if someone isn’t wearing their seatbelt. But, I do not think this qualifies as offering a complete set of decision/action alternatives.

1. My iphone

I give my phone a level 9 automation level. There are many instances in which our phones offer action alternatives, narrow down selections, and execute tasks automatically. Navigation apps provide a good example of this. When you type in a destination to a navigation app, it will give you a limited number of path options (narrows down the selection), even though there are an unlimited number of paths you could take. When you are driving, some navigation apps will automatically reroute you to save time without a choice, while some will ask you if you would like to change paths to save x minutes.

1. Autocorrect

I give autocorrect a level 7 automation level. Autocorrect on my phone or computer will suggest alternatives and execute those suggestions, sometimes if the human approves and sometimes without approval of the human.