**Spring 2024 EIN4245: Human Factors Applications**

**Reflection – Human Automation Interaction and Human Robot Interaction**

Answer the following questions based on the readings. The goal of this reflection is for you to understand the content of the papers, and for you to make connections to your own knowledge and experiences.

Your answers should be no more than 3 paragraphs each. If multiple answers are applicable, focus on the most important (or most relevant) topics or themes. You will be graded based on appropriateness of the answers, based on the readings, and connecting your own reflections and answers to the content of the readings. When possible, provide evidence from the paper to support your statements.

1. Based on Lee and Seppelt’s “Human Factors and Ergonomics in Automation Design” reading, provide a definition and compare and contrast tools, prostheses, and agents as different metaphors for types of automation. Using the example of driving and cars, describe how each of these metaphors may apply to how a driver thinks about their interactions with a self-driving car. Which of the metaphors beside aligns with your own view of how these technologies work?
2. Based on Lee and Seppelt’s “Human Factors and Ergonomics in Automation Design” reading, define the term “graceful degradation”, which type of automation pitfall does graceful degradation help address and why? Using the example of using Microsoft Co-Pilot or ChatGPT for writing professional e-mails in a marketing job, what would be an example of the type of failure that graceful degradation would address, and how might the AI be designed so that it can gracefully degrade?
3. Based on Lee and Seppelt’s “Human Factors and Ergonomics in Automation Design” reading, define what trust means in a human-automation context. Consider a collaborative human-robot interaction task such as the one described in this video about an UR robot arm (<https://www.youtube.com/watch?v=REn2e9wd_Wg>), how does the concept of trust apply? Compare that with how trust might be applied in the case of using adaptive cruise control in a vehicle. What are the differences between these two applications and how the concept of trust is applied?
4. Based on the Marsen and Kirby “Allocation of Functions” reading, consider the arguments set out in the “reliability and validity” section against function allocation. Provide specific examples from the methods described in this paper that agree with the critiques of function allocation. Consider things such as the task analysis process, methods for determining the allocation, and so on. Next, consider the warehouse “picking” task described during class. Do the arguments described apply to that example of function allocation? Why or why not?
5. Based on the Tran, Hiliard, and Jamieson “Keeping the Lights on Across the Continent” reading, describe why information visualization is a key part in helping operators monitor complex power grids. Draw on relevant sections of the Lee and Seppelt reading to further support your arguments.