

Humans and Aerospace
Humans and Automation Question

- I. (40%) NASA has recently awarded Boeing and SpaceX contracts for the Commercial Crew program. One consideration within the design of a commercial crew program is to design how the crew will interact with the capsule. You have been placed on SpaceX's human factors team that is considering the appropriate level of automation for the Dragon capsule during the controlled landing phase. What role would you suggest for the commercial crew? Justify your suggested role with a discussion of the levels of automation and the human's information processing model.

- II. (40%) **Design a study** to examine your selected level(s) of automation for a member of the commercial crew during a nominal and off-nominal scenario. Specifically address:
 - a. Your null and alternative hypotheses for the study.
 - b. The definition of your study population(s) and why they were selected.
 - c. The nominal and off-nominal scenarios and why they were selected.
 - d. Discuss how you could assess workload and situation awareness for the given operational task.

- III. (20%) It is well known that fatigue affects decision making and the ability to perform operational tasks. Consider now that your crewmember will need to perform a set of tasks in a fatigued state. Discuss the effects of fatigue on decision making in the context of Rasmussen's Levels of Human Information Processing.