Student Name: ___________________________  Student ID # ___________________________

**UOSA Statement of Academic Integrity**

*On my honor I affirm that I have neither given nor received inappropriate aid in the completion of this exercise.*

Signature: ___________________________  Date: ___________________________
Question 1: Sensing and Acting in Reactive Robots (15 points)

A. Describe an example of sensor fusion in Jeeves. Explain why this is an example of sensor fusion.

B. Describe an example of sensor fission in Jeeves. Explain why this is an example of sensor fission.

C. Describe an example of behavior fusion in Jeeves. Explain why this is an example of behavior fusion.
Question 2: Implementing the Reactive Paradigm (30 points)

Consider any version (your choice) of the reactive robotics code we discussed extensively in class, based on the original code by Jones, et al. This code was written in IC which is a procedural language.

A. Explain one improvement to the code (unrelated to code reuse, see part B) you could obtain if you were to rewrite the code in an object-oriented language. (You do not need to rewrite the code. You only need to explain an improvement you would get if you were to rewrite the code.)

B. Would the object-oriented version of the code have any advantages over the procedural version of the code when it comes to code reuse? (For example, if I wanted to change the transmission of the robot, would I be able to reuse any more code from the object-oriented version than I would from the procedural version?) Explain your answer.
**Question 3:** Paradigms and Architectures (30 points)

Of the hybrid deliberative/reactive architectural styles described by Murphy (i.e., managerial, state-hierarchy, etc.), which is most similar to a *reactive* architectural style? *Explain your answer.*

Of the hybrid deliberative/reactive architectural styles described by Murphy (i.e., managerial, state-hierarchy, etc.), which is most similar to a *hierarchical* (functional modules) architectural style? *Explain your answer.*
Question 4: Hybrid Architectures (25 points)

Xavier is reported to have “virtual environment sensors” and “virtual movement sensors.”

A. How are these similar to the perceptual modules of reactive systems (such as potential fields, the feelforce module in the example of Brook’s subsumption architecture, etc.)? **Explain your answer.**

How are these different from the perceptual modules of reactive systems (such as potential fields, the feelforce module in the example of Brook’s subsumption architecture, etc.)? **Explain your answer.**