EN4562 : Autonomous Systems

Take Home Assignment

Task: Design a fuzzy logic throttle controller for vehicle collision avoidance

Intended Inputs:

1. Distance to obstacle (m)
2. Speed (km/h)

Output:

1. Throttle (%)

Steps to perform

a) Identify input fuzzy sets for the three crisp variables.
b) Write fuzzy control rules (Mamdani or TSK) that you think are appropriate for throttle control.
c) Calculate fuzzy memberships and corresponding throttle (as a %) for a given crisp input state (eg: speed=30km/h, distance to obstacle = 30m)
d) Show the control surface and evaluate its quality.
e) Use a simple vehicle model and simulate the FLC in Matlab
f) present your simulation results for five different initial conditions

Results submission:

Submit your report to moddle page before the deadline.