Topic Approval

The environment:

Mainly using Python.

Maybe MATLAB for the fuzzy logic toolbox.

The agents:

Several mobile robots with 3 distance sensors (front, left, right) or 4 distance sensors (front, left, right, behind). These robots have two wheels on each side, which speed is controlled by the sensors using serval control systems, e.g. directly set the value, PID, Fuzzy system.

The questions:

1. I want to compare the performance (e.g. time cost, route length) between different control systems.
2. Which control systems is the best doing certain tasks, e.g. avoiding obstacles, following walls or route, escaping maze.
3. Compare the performance between agents based on different fuzzy systems.

Experiments:

I think the two questions above are actually related. If I want to compare the performance between different control systems, I need to set up tasks and evaluate them using the same tasks. I will design one (or more) agents for each control systems, designing several tasks, run the agents and collect the data (e.g. time or route length). Then using the data to compare their performance. Additionally, I can design serval agents based on fuzzy systems with different fuzzy sets or rules to compare the fuzzy systems.