Development of a test automation environment for demonstration purposes in the context of AI-based test automation assistance systems

Project Objective
System testing of electrical control units (ECU) comes with various challenges. Not only for test managers, who strive to exploit their limited, available test resources optimally, but also for test engineers working with the Hardware-in-the-loop test benches (HiL) it is particularly challenging to identify, recognize and classify faults in order to take appropriate action. Therefore, we develop concepts and demonstrators in cooperation with industry for so-called test automation assistance systems. In order to demonstrate the applicability of an approach currently under development at our chair, we want to build up a test automation environment in our lab.

Tasks
1. Discuss with us the different test automation assistance system concepts and choose the one you are most interested in.
2. Conceptualize and build up the test automation environment (also possible to set up a simulation environment) for the didactic platform we have in our lab.

Depending on your interests:
3. Develop an HMI concept (potentially a GUI) for interaction and information exchange with the test automation assistance systems.
4. Generate data as input for the AI-based test automation assistance systems (e.g. record test runs and label the data) and work on the machine learning-based approach itself

Required Skills
- Analytical skills and creativity
- Open-mindedness
- Interest in software development
- Interest and basic knowledge about machine learning techniques
- Basic knowledge about software agents is beneficial

What we offer
- Opportunity to work with us on scientific publications, especially when continuing after the IDP as working student (HiWi) or master's thesis
- Broad range of (self-)training opportunities in the areas of agent systems, automation, cyber-physical systems, formal methods, functional safety, machine learning, test automation
- Student laboratory
- Supervision possible in English or German

Accompanying course at our chair
Summer term: Basics of Dependable Systems

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