Test Generation for Robot Self-Examination

Robot software is usually very versatile and interconnected; this makes it difficult to perform extensive testing before deploying software on a robot

Questions

1. How can we **automatically generate informative tests** for complex robot software?
2. How can we **increase the introspection** of robots by testing?

Task

1. Familiarise yourself with property-based testing and other techniques for automatic test generation
2. Develop a (simulation-based?) framework for generating, running, and evaluating tests
3. Investigate the use of our robotic black box for performing regular automated tests

Supervisors

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- Alex Mitrevski

[1] "Hypothesis," `https://hypothesis.works`.

[2] A. Santos, A. Cunha, and N. Macedo, "Property-Based Testing for the Robot Operating System", *ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, Nov. 2018.

[3] D. Araiza-Illan, A. G. Pipe, and K. Eder, "Model-based Test Generation for Robotic Software: Automata versus Belief-Desire-Intention Agents", *CoRR*, abs/1609.08439, Feb. 2016.

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