Machine Learning-Based Control Model Development for Real Actuator

Context:
The EPFL Xplore Research Pole has the objective of building a legged robot. The robot is designed to autonomously navigate through challenging terrain using its on-board sensors.

Project description:
The primary goal of this project is to develop a machine learning model utilizing real actuator data to enhance control capabilities. Leveraging the insights derived from the actuator's behavior, the project aims to create a model that can optimize and improve the control system. This initiative aligns with the broader objective of advancing control techniques through the integration of machine learning methodologies.

Furthermore, the student will be an integral part of the Xplore Legged Robot Team, actively participating in its weekly meetings and working sessions. This collaboration will facilitate close interaction with other team members, and the student is expected to share their findings and progress with the team regularly.

Tasks:
The project involves a series of tasks, outlined below (note that this list is not exhaustive):
- Data Acquisition and Preprocessing
- Feature Selection and Model Design
- Model Training and Validation
- Integration with Control System
- Testing and Performance Evaluation

Expected Outcomes:
- Development of a machine learning model tailored for real actuator control.
- Enhanced understanding of the actuator's behavior and response through data-driven insights.
- Successful integration of the machine learning model into the control system.
- Improved control system performance, showcasing the benefits of machine learning adaptation.

Contact:

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