

**Possibly Credited Project - Need further discussion with you & professor
Spring 2025**



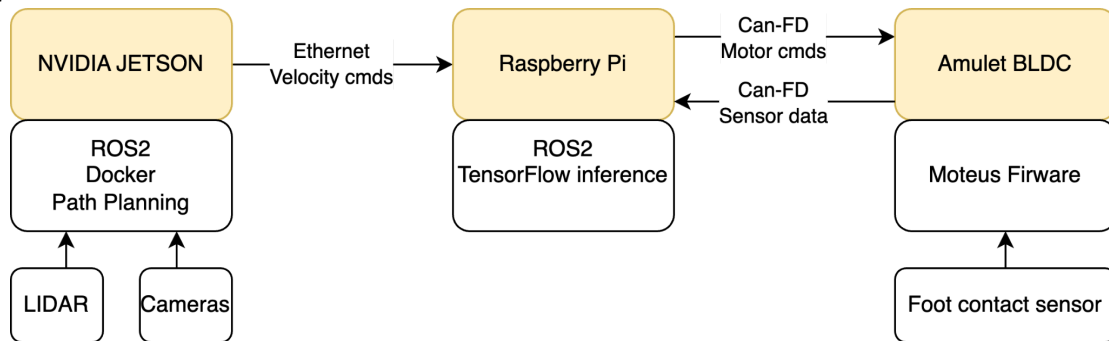
Full-stack developer for large quadruped robot (ROS2, Docker, Gazebo)

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. This kind of robot requires a robust and complex mechanical design, but it wouldn't move at all without an equally complex software.

Project description:

The goal of this project is to build the foundations of the software pipeline for advanced control of a quadruped robot. The software architecture will be as follows:



The student will implement the software on the NVIDIA and the Pi. The code on Amulet should be ready to send data to the Pi.

Tasks:

- **Literature Review and Familiarization** - conduct a literature review focused on existing software stack for autonomous robots, computing components choices, protocols...
- **Coding** - Implement a Docker environment with ROS2 on the Jetson and the Pi. Implement all the major ROS2 nodes, and a Gazebo simulation.
- **Testing** - Send a velocity command from a Docker container in the student's computer (==NVIDIA) through a ROS2 node to the Raspberry pi, run an inference on the RL model, and send the returned commands to the motor through Amulet over CAN FD.

Requirements:

- A solid experience/knowledge with at least one of the following: ROS2, Gazebo or Docker.
- Experience with RaspBerry Pi or NVIDIA platforms.
- Critical thinking, autonomy and initiative across the multiple software layers.

Contact:

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