

Custom Jetson carrier board for quadruped head

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. The head of the quadruped might need a custom carrier board to house a Jetson for controlling a camera and other peripherals.

Project description:

The goal of this project is to design a carrier board for a jetson Nano obc. It should be mechanically integrated with the head of the quadruped and expose multiple high-speed interfaces.

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):

- **System design** – design PCBs and choose communication protocols to interface with the rest of the system. Take into account the tradeoff between robustness, bandwidth and complexity.
- **Prototyping** – Assemble the PCB
- **Coding** – Flash the Jetson and validate each interface

Requirements:

- Experience with PCB design (KiCAD, Altium) with 4+ layers.
- Experience with high-speed PCB design guidelines.
- Experience with design for EMC/EMI.
- Experience with Jetson environment (Linux, Jetpack) and communication over sockets, Ethernet or CAN.

Contact:

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