Optimisation of Body-ground Contact for Augmenting the Whole-Body Loco-manipulation of Quadruped Robots

Wouter Wolfslag, Christopher McGreavy, Guiyang Xin, Carlo Tiseo, Sethu Vijayakumar and Zhibin Li
University of Edinburgh, United Kingdom

- Propose using **prongs** to enable body-ground contact of quadrupeds, enhancing robustness and manipulation capabilities.
- Propose a method for fast approximation of the Smallest Unrejectable Force (SUF), a metric for robustness against disturbances.
- Show that prongs can increase the SUF by up to 35%
- Show in hardware experiments that the body-ground contact can be effectively controlled using an hierarchical QP

Experimental snapshot of quadruped lifting a box with two legs, relying on prongs