Robust Footstep Planning and LQR Control for Dynamic Quadrupedal Locomotion

Guiyang Xin¹, Songyan Xin¹, Oguzhan Cebe¹, Mathew Jose Pollayil², Franco Angelini², Manolo Garabini², Sethu Vijayakumar¹,³, Michael Mistry¹
¹ School of Informatics, University of Edinburgh, UK
² Department of Information Engineering, University of Pisa, Italy
³ Shenzhen Institute for Artificial-Intelligence and Robotics for Society, China

- A fast MPC subject to linear inverted pendulum model is proposed to generate foot steps.
- The LQR is used to control the base leveraging the non-diagonal feedback gain matrix.
- Adaptive feet benefit walking on terrains with rock and gravels.