Dipartimento Meccanica Matematica Management

MUR
Dipartimento
di Eccellenza
2018-2022
2023-2027

# Research project

**Nome and Surname:** Antonio Papangelo

**Title:** Rapid tuning of interfacial adhesion in soft polymeric contacts

**Description:** The post-doc researcher will have to carry out scientific research activities within the ERC Starting Grant project "SURFACE" (ID: 101039198) whose objective is to develop microstructured adhesive surfaces capable of regulating adhesive contact forces through the use of a high frequency vibration signal with micrometrical amplitude. The current strategy to adhesion enhancement of soft interfaces exploits the principle of contact splitting, which results in microstructuring soft interfaces with micrometric size features like mushrooms or cylindrical pillars. This project aims at testing micro-patterned interfaces in presence of high frequency microvibrations, exploiting the possibility to rapidly regulate adhesion forces in few milliseconds, increasing or decreasing the overall adherence of the interface in real-time. This aligns with the research currently carried on at the TriboDynamics Lab [10.1016/j.jmps.2024.106020, 10.1016/j.jmps.2024.105844]. This research project aims at the development of a new technology for pick-and-place manipulators, smart end-effectors capable of finely controlling grip and release forces, adhesive pads for the locomotion in robotics. The developed interfaces must be energy efficient, versatile and robust for soft robotics applications. The project will involve both experimental and numerical activities.

**Candidates should provide detailed CV**

**Contacts**

Antonio Papangelo: antonio.papangelo@poliba.it