

# ROBOTSKIN - Skin-Based Technologies and Capabilities for Safe, Autonomous & Interactive Robots

RoboSKIN will develop and demonstrate a range of **new robot capabilities based on the tactile feedback provided by a robotic skin from large areas of the robot body**. Up to now, a principled investigation of these topics has been limited by the lack of tactile sensing technologies enabling large scale experimental activities, since so far skin technologies and embedded tactile sensors have been mostly demonstrated only at the prototypal stage. The new capabilities will improve the ability of robots to **operate effectively and safely in unconstrained environments** and also their ability to **communicate and co-operate with each other and with humans**.

To support this aim, one side of the RoboSKIN project focuses on the investigation of **methods and technologies enabling the implementation of skin sensors that can be used with existing robots**. The other side of the project develops new structures for representing and **integrating tactile data with existing cognitive architectures in order to support skin-based cognition**, behavior and communication.

RoboSKIN will pursue three main objectives:

To develop **new sensor technologies** that can provide tactile feedback from large areas of the robot body. This development process will be incremental and will take advantage of the feedback arising from the application of these technologies towards the other project objectives.

To develop and integrate **fundamental cognitive structures** for efficient and safe utilization of tactile data in terms of a robot body image, safe reflexive reactions to tactile events and flexible representations of spatially and temporally distributed patterns of physical contact.

To develop **cognitive mechanisms** that use tactile feedback to improve human-robot interaction capabilities particularly in the application domains of programming through demonstration and robot assisted play.