

Workshop on Actuation & Sensing in Robotics

Session B - Sensing

B2

Development of angular, force and tactile sensors for tendon-driven robotic hands

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The development of new sensors for robotics application within the DEXMART project aims at overcoming the limitations of current devices for grasping and manipulation activities. From the design and construction point of view, it is necessary to improve different aspects of the sensing system, with the development of new, more compact, low-power consumption, precise and robust displacement, force, torque and tactile sensors. The autonomy and dexterity of a robotic hand are ensured only if a suitable sensing system is available.

This presentation will show some solutions, based on optoelectronic technology, to realize a joint angle sensor, a tendon force sensor and a tactile sensor. All of the presented concepts have been developed to be integrated in the new version of the UB Hand. The working principle, the prototype and the calibration will be presented for all sensors.

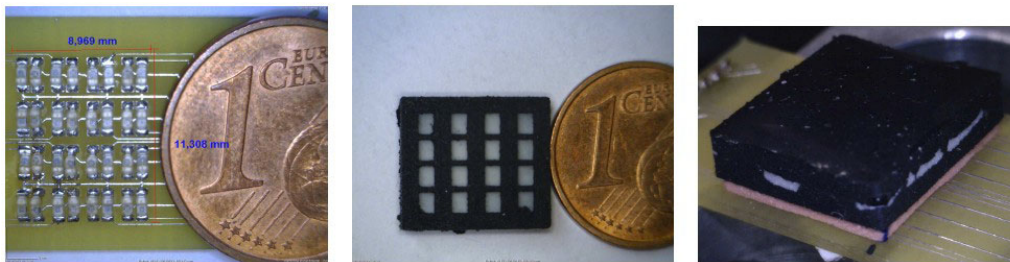


Figure 1 - Tactile sensor prototype.

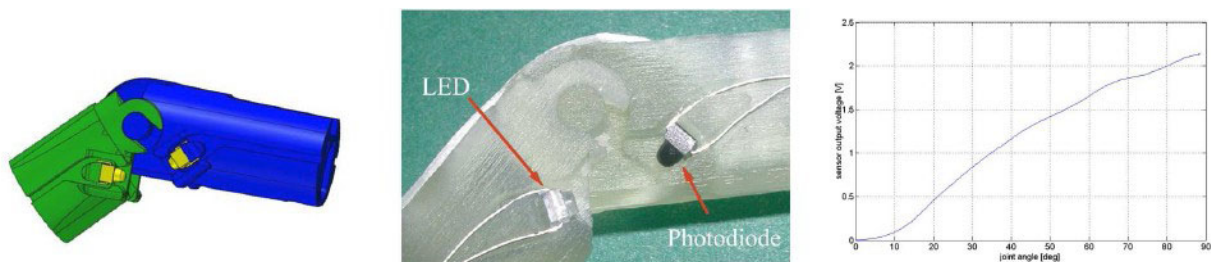


Figure 2 - Angular sensor prototype.



Figure 3 - Force sensor prototype.