



IRI-MdM International Internship Programme 2018

PROPOSAL MdMII-1

Design and Implementation of an algorithm for Event-Inertial SLAM

Supervisor:

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Proposal:

Robots nowadays are able to do many of the household tasks, like ironing clothes [1]. However, most of these robots, need a person to set the cloth garment in a predetermined position. It would be desirable to remove the human from the loop and let the robot do everything by itself.

Usually cloths are let on a basket case or are located inside a laundry machine after washing. Therefore, when we pick up a cloth, the first step is to unwrap it until obtain a desired configuration[2]. We could fold or unfold [3] the cloth until it gets the desired position for ironing.

We plan to make a physical simulation of all the process with Blender [4]. Blender will allow us to design a cloth garment and a robotic arm, to simulate the action of pick up a cloth. The important part of the project will be to detect the best grasping points of a cloth in a random configuration[5].

Ideal Candidate:

- Knowledge of computer languages: c/c++, python
- Preference if have worked already with Blender or Similar and it's familiarized with deep learning and Reinforcement learning algorithms

References:

- [1] Li, Hu, Xu, Yue, Grinspun, Allen, "Multi-Sensor Surface Analysis For Robotic Ironing", ICRA 2016
- [2] Jia, Hu, Pan, Manocha, "Manipulating Highly Deformable Materials Using a Visual Feedback Dictionary", ArXiv 2017.
- [3] Doumanoglou, Kargakos, Kim, Malassiotis, "Autonomous Active Recognition and Unfolding of Clothes using Random Decision Forests and Probabilistic Planning", ICRA 2014.
- [4] <https://www.blender.org/>
- [5] Martinez, Ruiz del Solar, "Recognition of Grasp Points for Clothes Manipulation under unconstrained Conditions", Robocup Symposium, 2017.