Czech Technical University in Prague
Faculty of Electrical Engineering

Department of Cybernetics

DIPLOMA THESIS ASSIGNMENT

Student: Bc. Tadeáš L e j s e k

Study programme: Cybernetics and Robotics

Specialisation: Robotics

Title of Diploma Thesis: Dual-Arm Robot Perceiving and Manipulating Soft Objects – Use Cases

Guidelines:

1. Familiarize yourself with the state-of-the-art in robotic manipulation with soft objects and the environment the CloPeMa testbed provides at FEL. Add on your own work in the compliant motion control.
2. Design and implement three scenarios (use cases), in which the dual-arm robot will perceive and manipulate soft objects, two of them be (1) tying/untying knots in the free space; (2) shooting from a slingshot. Find/design the third scenario. You can put more emphasis to one of the three selected scenarios.
3. Implement selected three scenarios on the CloPeMa testbed, evaluate it experimentally and document it.
4. Prepare demonstrations showing your work.

Bibliography/Sources:

[1] Spong, Mark W.; Hutchinson, Seth; Vidyasagar, M.: Robot modeling and control. Wiley, 2006, ISBN 978-0-471-64990-8.
[2] Stria J. et al.: Garment Perception and its Folding using a Dual-arm Robot, accepted to IROS 2014, Chicago, USA.

Diploma Thesis Supervisor: prof. Ing. Václav Hlaváč, CSc.

Valid until: the end of the winter semester of academic year 2015/2016

L.S.

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Prague, July 8, 2014