

# Towards Better Robot Manipulation: Improvement through Interaction

## Fact Sheet

### Project Information

ITHRUI

Funded under  
FP7-PEOPLE

Grant agreement ID: 628854


Overall budget  
€ 283 760,52

Status  
Closed project

EU contribution  
€ 283 760,52

Start date  
12 March 2014

End date  
11 August 2016

Coordinated by  
**MIDDLE EAST TECHNICAL  
UNIVERSITY**  
 Turkey

## Objective

This project will investigate how learning can be used to improve and expand the manipulation abilities of a robot-out-of-a-box. We argue that, the robot-out-of-a-box should come with both (1) a set of built-in capabilities that would enable it to solve manipulation tasks in unstructured human environment, as well as (2) the learning ability to extend and improve, and with guarantees not to hinder, its capabilities through its interactions over the lifetime of the robot with minimal (none wherever possible) user effort.

One major approach towards the development of built-in capabilities for robot manipulation falls under the Sense-Model-Plan-Act (SMPA) paradigm, which relies on the maintenance of a world model built from sensory readings through the use of sensing and action models. The research carried under under this paradigm makes general and conservative assumptions about the robot, the environment as well as the interactions between them and builds models that are guaranteed to provide an

optimal level of performance when these assumptions hold. This makes them suitable as built-in capabilities that can be put in “the box”.

Another approach that has taken root during the last decade puts emphasis on the embodiment and the situatedness of the robot and focuses on learning through interaction, which falls under the Sense-(Plan)-Act (S(P)A) paradigm. These studies often shy away from the use/building of analytic models of the robot, its environment and interactions between them, and operate mainly the “perceptual space” of the robot.

The project will study how methods developed within these different paradigms can be integrated such that the manipulation skills of a robot can be improved through the use of sensory-motor data collected during its interactions.

## Programme(s)

## Topic(s)

## Call for proposal

FP7-PEOPLE-2013-IOF

## Funding Scheme

MC-IOF - International Outgoing Fellowships (IOF)

## Coordinator



### MIDDLE EAST TECHNICAL UNIVERSITY

Address

Dumlupinar Bulvari 1  
06800 Ankara

 Turkey

[Website](#) 

Administrative Contact

**Irem Dikmen Toker (Prof.)**

Activity type

**Higher or Secondary  
Education Establishments**

[Contact the organisation](#) 

EU contribution

**€ 283 760,52**

**Last update:** 19 December 2016

**Record number:** 186631

**Permalink:** <https://cordis.europa.eu/project/id/628854/>

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