

SecondHands:

A robot assistant for industrial maintenance

Graham Deacon, Ocado Technology (Coordinator)



Lourdes Agapito, UCL



Tamim Asfour & Sebastian Stueker, KIT



Aude Billard, EPFL



Fiora Pirri, Sapienza University of Rome



Which step changes will our project achieve?



- Conceptually the robot's task is to provide a second pair of hands to a maintenance technician.
- We will develop a system that is able to recognise human activity and pro-actively offer assistance when appropriate.
- In essence the robot will know what to do, when to do it, and how to do it, in a manner that a human can depend on.
- This will require us to improve the TRL in the areas of mechatronics, human-robot interaction, perception and cognition.

What is our approach?

- Design of a robot that
 - exhibits the range of dexterity and flexibility warranted by the domain
 - can guarantee safe interaction when working in close proximity with a human
- Training of the perceptual system to identify objects and actions
- Training of the overall system:-
 - with a repertoire of cooperative interaction motion primitives
 - to understand the scope of a task
 - when involvement is helpful
- An incremental proof of concept



Impact of our project

- A robot designed to work interactively with a person.
- A significant advancement in the automation of the relatively unexplored domain of production machine maintenance
- Reduction in production machinery maintenance costs
- The development of technologies and techniques that can be used to construct robot assistants in other domains
- User confidence that robots can be useful, reliable and efficient.

