HRI Reading Group
@ Instituto Superior Técnico

Meeting #1 (22 Oct 2018)

Paper

Goodrich, M. A., & Schultz, A. C. (2008). **Human–robot interaction: a survey.** Foundations and Trends® in Human–Computer Interaction, 1(3), 203-275.

Introduction

Remote Interaction

Proximate Interaction

Within these: Mobility, physical manipulation and social interaction

This distinction has mainly to do with how communication is different between remote and proximate interactions.
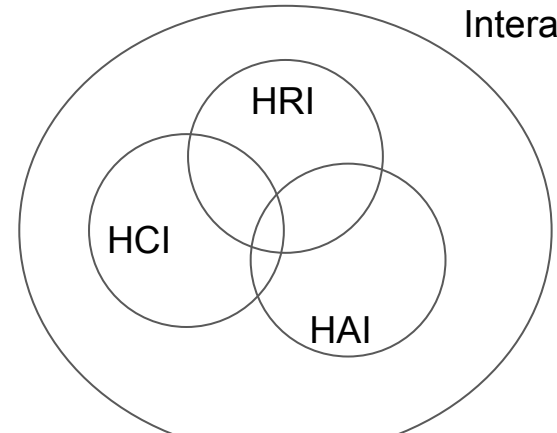
Early History of Robotics and Human-Machine-Interaction / Emergence of HRI as a field / Relation to other fields

Is HRI a new field of study or simply a reformulation of previous work?

YES, it's a new field!
Both physicality and agency have distinct challenges (social norms, communication, etc.), changes the perceptions and the expectations of the possible actions of a robot.

Human-Technology Interaction

HRI

HCI

HAI

What defines an HRI problem?

The authors present autonomy in a way that it has to include some sort of intelligence or reasoning about the world or the interaction itself.

- Level and behavior of autonomy
- Nature of information exchange
- Structure of the team
- Adaptation, Learning and Training of the people and the robot
- Shape of the task

Their interaction definition is more related to collaboration

Interaction: The process of working together to accomplish a goal
Interaction: The process of ...
Does it require a goal? What is a goal?

teleoperation
mediated teleoperation
supervisory control
collaborative control
peer-to-peer collaboration

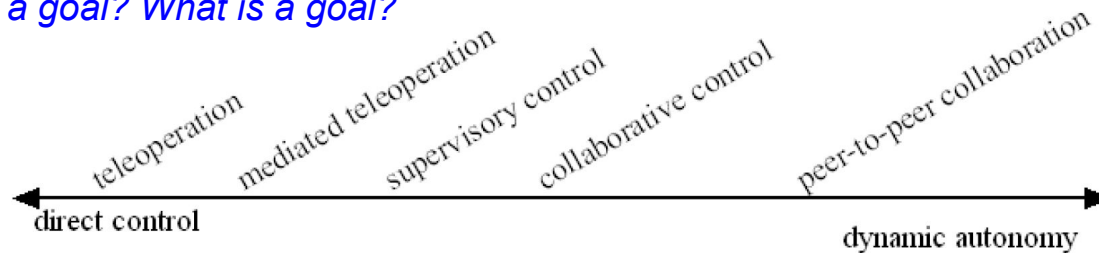direct control ←————————————————————————→ dynamic autonomy

Fig. 4.2 Levels of autonomy with emphasis on human interaction.

Problem domains in HRI

Table 5.1 Examples of roles and proximity patterns that arise in several application areas.

Application area	Remote/Proximate	Role	Example
Search and rescue	Remote	Human is supervisor or operator	Remotely operated search robots
	Proximate	Human and robot are peers	Robot supports unstable structures
Assistive robotics	Proximate	Human and robot are peers, or robot is tool	Assistance for the blind, and therapy for the elderly
	Proximate	Robot is mentor	Social interaction for autistic children
Military and police	Remote	Human is supervisor	Reconnaissance, de-mining
	Remote or Proximate	Human and robot are peers	Patrol support
	Remote	Human is information consumer	Commander using reconnaissance information
Edutainment	Proximate	Robot is mentor	Robotic classroom assistant
		Robot is mentor	Robotic museum tour guide
		Robot is peer	Social companion
Space	Remote	Human is supervisor or operator	Remote science and exploration
	Proximate	Human and robot are peers	Robotic astronaut assistant
Home and industry	Proximate	Human and robot are peers	Robotic companion
	Proximate	Human is supervisor	Robotic vacuum
	Remote	Human is supervisor	Robot construction

Roles:

• Supervisor

• Operator

• Mechanic

• Peer

• Bystander

• Mentor

• Information Consumer (supplier?)

Brainstorming session: Come up with new roles for robots / new HRI scenarios

- Split edutainment into entertainment, education and art
- Considerations about assistive robotics: not an application area, but rather a role
- Agents displayed in a frame that would continuously painting according to the motion and verbal instructions of the people passing by. Human as information consumer, or bystander or peer.
- Robot as political candidate
- Bodyguard robot
- Mentor that suggests you experience based on books
- Trainer / adversary for sports (e.g., table tennis, robosoccer)

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Meeting #2 (29 Oct 2018)