

POLITECNICO DI MILANO  
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Advanced User Interfaces Course



Teo 2 (Emotional Teo)

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# Abstract

Robotic companions have been proved effective to promote social skills. It is thought that this capability is enhanced when the robot exhibits some “emotional” behavior.

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# Introduction

The goal is to re-engineer and extend the existing version of Teo 2 with a Cognitive Module (enabling emotional sensing, expression features, adaptive Human-Robot Spatial Behavior and adaptive polite/intimate Behavior) and possibly evaluating the results against Teo 1.

The document is structured in this way:

- Chapter 1: it describes some possible scenarios



# Chapter 1

## First chapter

### 1.1 Games

### 1.2 Interactions

#### 1.2.1 User Meeting

##### 1.2.1.1 Previous State

Idle.

##### 1.2.1.2 Input

The therapist turns the robot in front of the user and selects «User Meeting» mode.

##### 1.2.1.3 Goal

To start a communication with Teo.

##### 1.2.1.4 Activities

Teo says «Hi!» and smiles (yellow leds). If the user responds, Teo says «Let's have fun! Are you ready?»

##### 1.2.1.5 Superability Manual Mappings

Area: Socialization

Teo:

- shows different emotional states based on the context
- greets verbally on demand
- responds verbally to greetings

#### **1.2.1.6 HW required**

Microphone, speaker, led matrix, external pc.

#### **1.2.1.7 SW required**

Voice recognizer, speech formulation system

### **1.2.2 User Smiling**

#### **1.2.2.1 Previous State**

Teo is in idle state and it is in front of the user.

#### **1.2.2.2 Input**

The user smiles.

#### **1.2.2.3 Goal**

To keep face contact with Teo.

#### **1.2.2.4 Activities**

Teo smiles (yellow leds).

#### **1.2.2.5 Superability Manual Mappings**

Area: Socialization

Teo:

- shows different emotional states based on the context

#### **1.2.2.6 HW required**

Led matrix, external pc, internal camera.

#### **1.2.2.7 SW required**

Face recognizer.

### **1.2.3 User Leaving**

#### **1.2.3.1 Previous State**

Teo is in idle state and it is in front of the user.

#### **1.2.3.2 Input**

The user goes far away.

#### **1.2.3.3 Goal**

To reconnect the connection between Teo and the user.

#### **1.2.3.4 Activities**

The teacher selects one of the following:

- Teo says «Goodbye!» and smiles (yellow leds)
- Teo says «Where are you going?» and becomes sad (purple leds)

#### **1.2.3.5 Superability Manual Mappings**

Area: Socialization

Teo:

- shows different emotional states based on the context

#### **1.2.3.6 HW required**

Speaker, led matrix, external pc, sonar sensor.

#### **1.2.3.7 SW required**

Speech formulation system

# Conclusions

# Bibliography

## Appendix A

### First appendix