CSSR for

Culturally Sensitive Social Robotics for Africa

D2.2 Robot Behaviour Specification

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Responsible Person: **D. Vernon** Revision: **1.1**

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Dissemination Level		
PU	Public	**PU**
PP	Restricted to other programme participants (including Afretec Administration)	
RE	Restricted to a group specified by the consortium (including Afretec Administration)	
CO	Confidential, only for members of the consortium (including Afretec Administration)	

Executive Summary

Deliverable D2.2 is concerned with the identification of the robot's behaviour in the two use-case scenarios described in Deliverable D2.1 Use Case Scenario Definition, Sections 3 and 4 of which define the robot actions, component movements and sensory cues, and the associated sensory-motor process specified in the use case interactions.

The purpose of this deliverable is simply to identify the ROS nodes that will implement these actions. It also identifies the ROS packages in which the ROS nodes will be implemented. We defer the detailed specification of these nodes to Deliverable D3.1 System Architecture Design, i.e., the exact functional description, the topics to which the nodes will subscribe, the topics on which the nodes will publish messages, the services that will be advertized and served, and the services that will be invoked.

Together with Deliverable D3.1, Deliverable D2.2 provides the requirements for work package WP5 on robot behaviours, complementing and augmenting the detailed specification already provided in the work plan.

The dynamics of the interaction between the visitor and the robot will be specified in Deliverable D5.4.2 Scenario Script Language, and implemented in the `scriptInterpreter` node in Deliverable D5.4.3 Scenario Script Interpreter.

Contents

1 Implementation of Robot Actions

Deliverable D2.1 Use Case Scenario Definition, version 1, identifies the set of baseline robot actions that are invoked when the robot interacts with the visitor, either in its role as a receptionist or as a lab tour guide. These are summarized in Table 1 below, along with the corresponding of ROS nodes that implement the robot actions, and the ROS packages in which the nodes are implemented. Each node has a set of configuration parameters that, suitably chosen, allows it to produce one or more required robot actions.

Deliverable D3.1 System Architecture Design provides a detailed specification of each ROS node. It specifies the node configuration parameters that are read from the associated configuration file, the data that are read from the associated input file, the data that are written to an associated output file, the ROS topics to which the node subscribes for input, the ROS topics on which the node publishes output, the services that will be advertized and served, and the services that will be invoked.

The dynamics of the interaction between the visitor and the robot, implemented with these ROS nodes and those identified in Deliverable D2.3, will be specified in Deliverable D5.4.2 Scenario Script Language, and implemented in the `scriptInterpreter` node in Deliverable D5.4.3 Scenario Script Interpreter.

Robot Actions	ROS Package	ROS Node
Animate behaviour	`cssr_system`	`animateBehaviour`
Deictic gesture	`cssr_system`	`gestureExecution`
Display dialogue	`cssr_system`	`scriptInterpreter`
Iconic gesture	`cssr_system`	`gestureExecution`
Locomotion	`cssr_system`	`robotNavigation`
Look up knowledge-base	`cssr_system`	`knowledgBase`
Navigation	`cssr_system`	`robotNavigation`
Rotate head to centre gaze on the visitor	`cssr_system`	`overtAttention`
Rotate head toward the office	`cssr_system`	`overtAttention`
Rotate torso to face visitor and adjust gaze	`cssr_system`	`overtAttention`
Speech synthesis	`cssr_system`	`integratedTTS`
Speech synthesis	`cssr_system`	`englishTTS`
Speech synthesis	`cssr_system`	`isiZuluTTS`
Speech synthesis	`cssr_system`	`kinyarwandaTTS`

Table 1: The ROS packages and nodes that implement the robot actions in the CSSR4Africa system.

Principal Contributors

The main authors of this deliverable are as follows (in alphabetical order).

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Document History

Version 1.0

First draft.
David Vernon.
31 December 2023.

Version 1.1

Adopted British English spelling of "behaviour" rather than American English because South African English is closer to British English.
David Vernon.
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