Tokyo University of Agriculture and Technology
東京農工大学

Developing an experimental platform for Human Robot Interaction based on human motions

Praveenkumar VASUDEVAN
European **M**aster in **A**dvanced **RO**botics
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Supervisors : Gentiane VENTURE, Associate Professor, TUAT
Yannick AOUSTIN, Maître de Conférence à l'Université de Nantes
Co-supervisor : Armando TACCHELLA, Associate Professor, University of Genoa

Motivation(s)

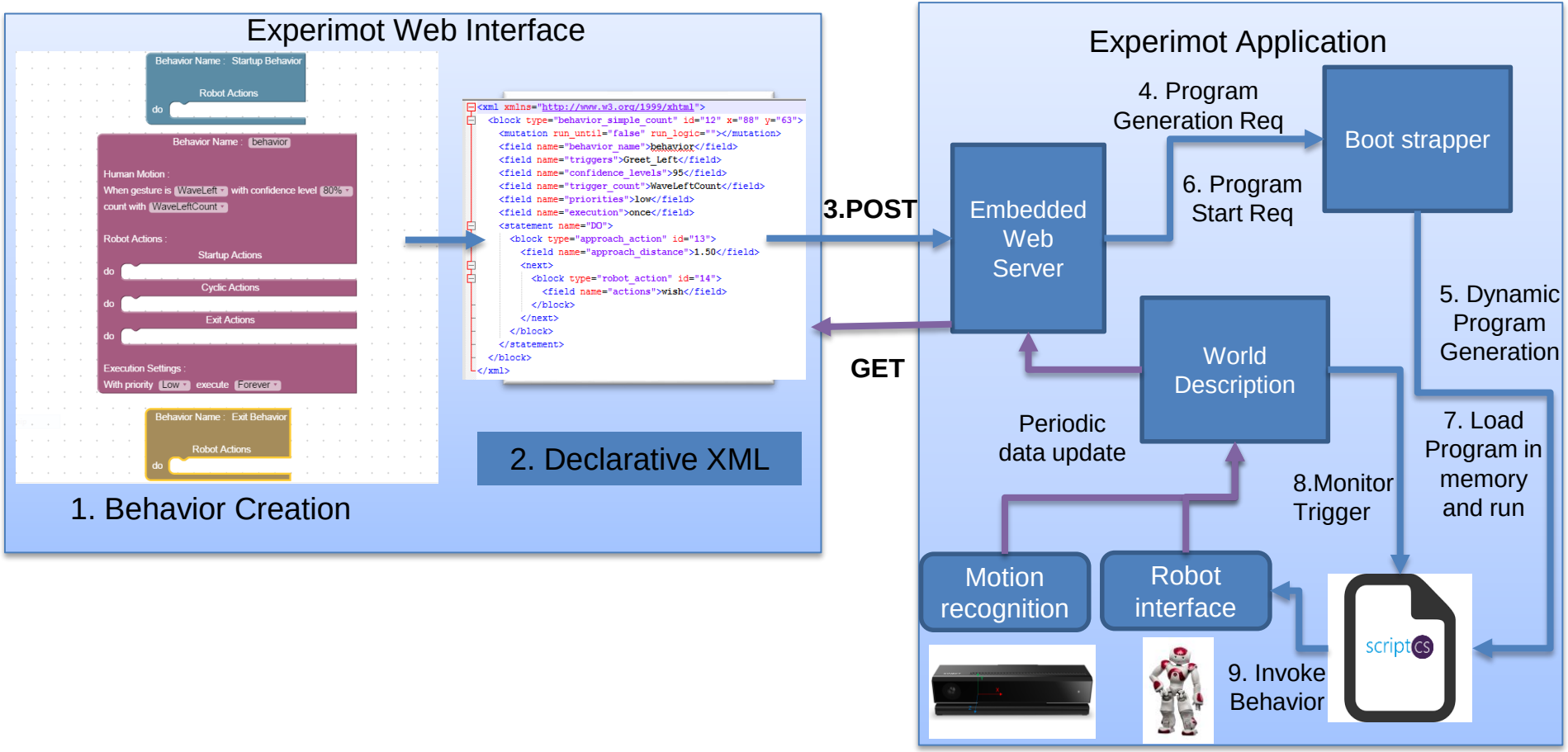
- Humans interacting with intelligent Robots has been seen as a potential game changer in the future.

- Human motion (Non-verbal communication) is rich in information and understanding it is very important to improve the interaction.
  - Motion conveys intention, health, emotion etc.,

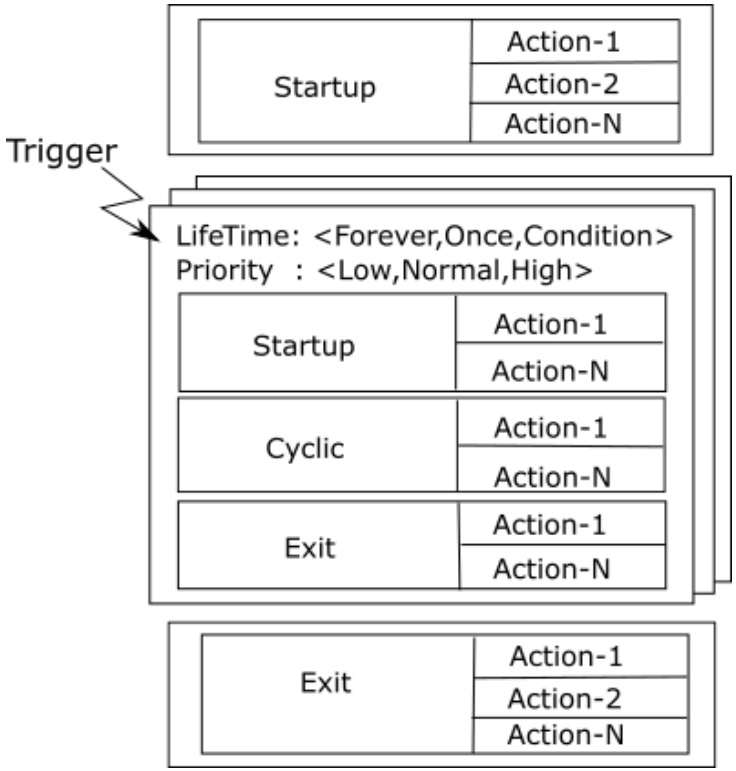
- Existing tools for designing HRI scenarios and robot behaviors are not scalable and requires skilled roboticists' assistance

- **Goal : To develop an experimental platform which**
  - **Facilitates interaction based on human motion**
  - **Is easy to use by a common user to design and execute interaction scenarios**

Behaviors: Design-Generate-Execute workflow

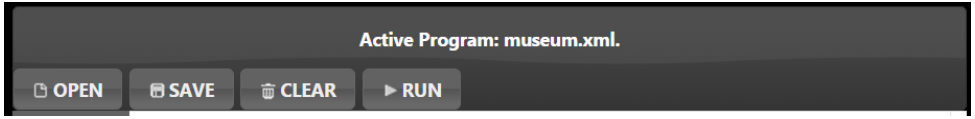


Behavior Program Structure



Misc Updates

- Web Client side UI has been improved
  - LOAD/SAVE/CLEAR



- Improvement to the behavior program parser.
  - Support for Gesture counter (Simple counting based on gesture active period)
  - Dynamic expression evaluator for program termination etc.,

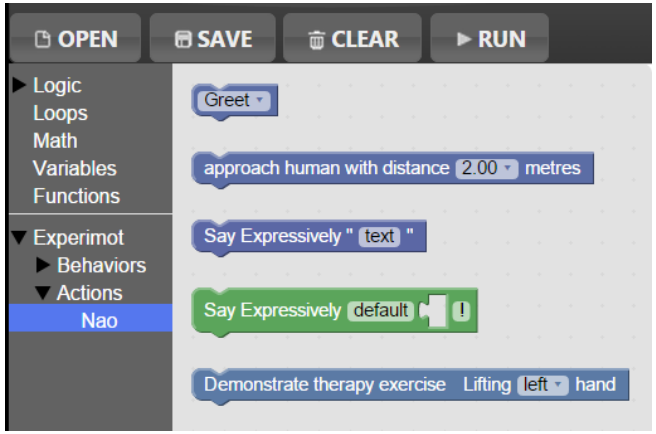
- Nao Behavior Execution module improvement
  - At startup, it registers a set of action capabilities to the application.
  - Each action is composed of <action_name,action_parameters>

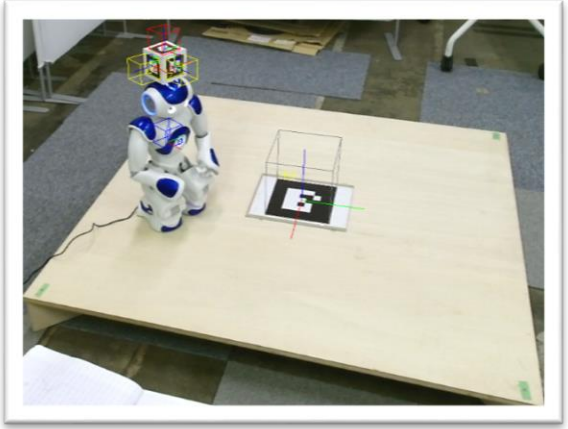
- Imitation support using the joint angles computed using KinectEx library - incomplete

Misc Updates

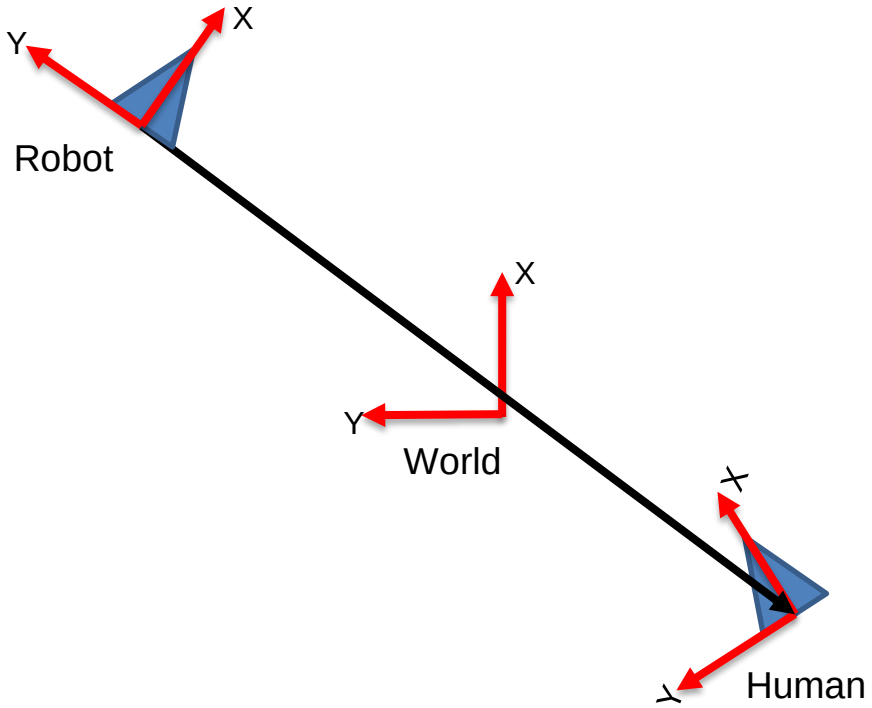
- Documentation
  - Thesis documentation started
  - ICSORO 2015 Conference paper update
    - Scenario 1: NAO as a demonstrator
    - Scenario 2: NAO as a therapy facilitator

New robot actions





Approach Behavior



TODO List

- Complete conference paper – Submission June 10, 2015
- Thesis Documentation
- User study
  - Think of scenarios
  - Collect user data
- Try to integrate with Turtlebot and Pepper?
- Try to integrate IMU sensor??

Thank you for your attention!