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Roboscopie

A Theatre Performance for a Human and a Robot [Video Abstract]

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1. THE PERFORMANCE

Theatre with robotic actors is an emerging field, with a few previous published results [1, 2, 3].

On the 14th of October 2011, we performed for a general public audience (over 300 persons) a 18 min long live theatre play, acted by professional actor Xavier Brossard and the LAAS/CNRS PR2 robot. The play was created and directed by Nicolas Darrot, a mixed-media artist from Paris.

The PR2 has been programmed in a 2-months course, reusing several software components developed at LAAS/CNRS, including the 3D environment for situation assessment SPARK, the ontology-based knowledge base ORO and the natural-language processor DIALOGS.

This video abstract presents the storyline of the play, and underlines some of the significant outcome for the human-robot interaction community.

The full-length version of the video, along with downloads of the open-source components, is available from `www.laas.fr/roboscopie`.

2. STORYLINE

The play discusses how humans and robots can find a common ground for understanding each other, by living in a kind of frontier world, where real objects are replaced by abstract, disembodied counterparts.

Xavier and PR2 share a white, almost empty, stage. To get the robot to see his world, Xavier must keep being recognized by the human tracking module that lies on the wall, and must stick everywhere 2D barcodes, instead of real objects. The robot can read and identify these barcodes, and while the stage gets covered by the tags, the robot constructs for itself a 3D world with the right-looking objects: a phone, a lamp, a hanger...

While Xavier is drawing by hand more and more of these 2D tags, the robot tries to offer its help. It brings first a bottle of water, then a fan... which blows away all Xavier's code. Angry, Xavier leaves, and PR2 remains alone.

The night comes, and the robot decides to explore the stage, scattered with those barcodes on the ground. On the next morning, Xavier discovers that the robot's 3D model is a mess, full of random objects: an elephant, a boat, a van... Xavier resets the robot model and starts to tidy up the place. The robot decides to help with a trash bin, but suddenly gives up and a new program starts: a home-training session. Xavier starts the exercises, but as the program goes along, the robot looks more and more menacing, up to the point that Xavier shouts "Stop!".

Xavier eventually shows one after the other the objects to the robot, explaining they are all fake, and like the robot, we realize that everything was just an experiment.

3. SIGNIFICANCE FOR HRI

A first noteworthy achievement of this project from the human-robot interaction point of view is the use and display of the set of research tools developed at LAAS in front of a general audience: while the show had been precisely scripted and rehearsed, the robot was running the same software components we use on a daily basis in the laboratory.

By building the performance storyline on the current, actual state of robotic research, the play also put light on three key questions of today's human-robot interaction: how the human and the robot can understand each others (the robot tries to help but remains intrusive)? how to share and coexist in a common living space? how roles build up between the human and the robot (who dominates)?

4. REFERENCES

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