

Acting Lesson with Robot: Emotional Gestures

Heather Knight

Carnegie Mellon University, Robotics Institute
5000 Forbes Avenue
Pittsburgh, PA

heatherbot@cmu.edu

Matthew Gray

Northeastern University, Department of Theatre
360 Huntington Avenue
Boston, MA

ma.gray@neu.edu

ABSTRACT

In this video, real-life acting professor Matthew Gray tutors Data the Robot (a Nao model) to improve his expression of emotion via Chekhov's Psychological Gestures. Though the video narrative is fictional and the robot actions pre-programmed, the aim of the dramatization is to introduce an acting methodology that social robots could use to leverage full body affect expressions.



The video begins with Gray leading Nao in traditional human actor warm-up exercises. Next, Gray shows Data a video of his students practicing Chekhov psychological gestures [4][11]. Finally, Data tries out some 'push' gestures himself. By pairing the 'push' gesture with text, the viewer is intended to unconsciously associate the words with an outpouring of emotion. Finally, Data's programmer, Knight, arrives to pick up the robot from his lesson, "until next time."

This video playfully introduces full-body emotional gestures. The benefit of such movement-based full-body expressions is that they do not necessarily require a robot to have human-like facial expressions nor humanoid form to be effective (though the interplay of psychological gesture with multi-modal expressions could provide fertile terrain for future research). Instead, these full-body motions are translations of an actor's motive/intent that suffuse the whole form (e.g. expansion, sluggishness, lightness).

Copyright is held by the author/owner(s).

HRI'12, March 5–8, 2012, Boston, Massachusetts, USA.
ACM 978-1-4503-1063-5/12/03.

We note that there are various schools of physical theater dedicated to understanding movement [5]. Related investigations in the robotics world that have applied acting method or practice to social robot design or architecture also include [2][3][6][7][8][9][10].

As Blaire writes about in her text on acting and neuroscience [1], the discovery of mirror neurons in our brain have led some dramaturges to theorize that audience members simulate the gestures of the performers through their own neural circuitry for interpretation. If so, full body gestures may be able to tap into our emotional experience in a uniquely human way. We hope this will be the first of several spirited demonstration videos that explore intersections wherein human acting methodologies might benefit the development of robot non-verbal expressions.

Categories and Subject Descriptors

J.5 [Arts and Humanities]: Arts, fine and performing**

Keywords

Acting Methodology, Entertainment Robots, Gesture, Robot Theater, Social Robots

REFERENCES

- [1] Blair, R.: Actor, Image, and Action: Acting and Cognitive Neuroscience. Routledge, New York (2008)
- [2] Breazeal, C., et al.: Interactive robot theatre. IROS (2003)
- [3] Bruce, A., et al.: Robot Improv: Using drama to create believable agents. AAAI (2000)
- [4] Chekhov, Michael: On the Technique of Acting, HarperPerennial, New York(1995)
- [5] Callery, D.: Through the Body: A practical guide to Physical Theatre. London: Nick Hern Books. (2001)
- [6] Demers, L.: Machine Performers: Neither Agentic nor Automatic. HRI Workshop on Collaboration w Arts (2010)
- [7] Hoffman, G., Kubat, R.: A Hybrid Control System for Puppeteering a Live Robotic Stage Actor. RoMAN, (2008)
- [8] Knight, H.: A Savvy Robot Standup Comic: Online Learning through Audience Tracking. Workshop paper, ACM TEI (2010)
- [9] Knight, H.: Eight Lessons Learned about Non-Verbal Interaction through Investigations in Robot. ICSR (2011)
- [10] Lu, D., Smart, W.: Human Robot Interaction as Theatre. RoMAN (2011)
- [11] Rumohr, F.: Michael Chekhov, Psychological Gesture, and the Thinking Heart. Chapter in Movement for Actors, ed. Potter, N. Allworth Press, New York (2002)