

Colloquium on Performing Arts and Robotics

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Robots are increasingly being used in theatrical settings as actors alongside their human counterparts. However, many of these productions rely the technical novelty of the inclusion of robots to justify their use, or merely use the robot as a mobile speaker to convey dialogue. Our work uses robots in theatre to study the effectiveness of robots conveying information solely through their physical action.

This work was presented in September 2010 at a joint colloquium between the performing arts and computer science departments at Washington University in St. Louis. The centerpiece was a short movement piece, included in its entirety in the video, where a robot and a human interact on stage with the goal of conveying a meaningful story just through their physical actions.

The piece was first composed and rehearsed using two human actors, with one of the actor's motions constrained to movements which our robot, a B21r, could also perform. The actors' movement and timings formed the basis for the robot's movements, which employed a minimal Wizard-of-Oz controller.

We drew from Polish director Jerzy Grotowski's work on physical action to see if we could create an interaction that was both understandable and believable. We formulated each of the robot's actions in terms of an overall objective in relation to the other actor, in the same way the human actor did.

Often people find it hard to understand what a robots are "thinking." Actors however excel at performing physical actions in such a way that you know exactly what they're trying to do. This work is the beginning of our research into extracting that methodology and putting it onto robots to help clarify HRI in the real world.