Creative Robotics Theatre: Designing Creative Interactions with Tangible and Embodied Interface

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1 WORKSHOP THEMES AND GOALS

Creative robotics theatre allows us to explore contemporary problems and societal issues, pushing artistic frontiers and technological boundaries, enhancing storytelling opportunities, interdisciplinary collaborations, and pedagogical innovation [28]. With the above issues in mind, we aim to explore new technologies by co-designing with the community in participatory approaches that stem from posthumanism and new materialism philosophies .

We will explore the values of embodied intelligence [5] such as movement, gaze, gesture, haptic touch, musicalisation of delivery, vocalisation, and voice, in a creative and performative manner using creative robotics and participatory design approaches. We invite a specialised audience, including experts and professionals from the fields of performing arts, design, and creative technologies, to participate in an interactive workshop that explores the question of 'how do we design' for creative robotic theatre? The workshop aims to examine the relationships between technology, performance, and society.

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Finally, this will enable us to explore the impact of this interaction on wellbeing, care and other societal applications. In doing so, issues of vulnerability, failure and disobedience as a creative stimulus will be juxtaposed with societal robotics and their relation to society.

2 BACKGROUND AND MOTIVATION

Theatre is a powerful tool to explore and imagine societal change [2]. Performative arts have poetically explored and incorporated robotics [4, 9, 16, 19, 31] and immersive and site-specific performances [10, 25].

Robots are moving out of industrial environments and into our most intimate social spheres, at our homes, entertainment and care environments [15, 24]. Theatre and performing arts have been proven to enhance well-being and mental health [14]. Therefore, they can provide insights into designing robots to support societal challenges, such as ageing populations [7, 22, 32, 34] , post-covid solipsism [27] and address the broader impact of robotics in work and everyday life [18, 26].

Through improvisation, physical storytelling, and interactive technologies that facilitate interactions between humans and non-human robotic entities within a physical space, we seek to explore the intersection of robotics and theatre. This exploration serves as a reflection on the complex relationship between humans and non-human entities, including robots, within our posthuman society.

Our motivation for this workshop is to contribute to the creation of new design methods by incorporating participatory methodologies in collaboration with communities. We aim to establish fresh relationships between ourselves, technology, and our societies. In this workshop, we prioritise inclusivity and the representation of bodily and cultural diversity. Additionally, we provide privileged access to applicants from minority and marginalised groups. We firmly believe that diversity is a crucial criterion for challenging mainstream approaches to robotic design and expanding their applicability beyond creative robotic theatre to other domains, such as well-being and techno-social equity.

3 METHODOLOGY

Human-Computer Interaction (HCI) has seen an increased interest and attention to bodily, felt experiences and tacit knowledge.

Existing methods include live action role-playing and scenario enactment [23], bodystorming [13], choreographic techniques [6] amidst other examples drawn from performance and theatre practices [20, 21, 29, 30].

In this workshop, we integrate theatre and performance techniques, including movement exercises, isolation work focused on different parts of the human body, and explorations in physicality inspired by the Grotowski theatre laboratory [11, 12]. Additionally, we incorporate methods for building ensemble dynamics and spatial awareness, drawing from Anne Bogart's system of Viewpoints [3].

Another aspect at the core of this workshop is the participatory dimension. The participatory turn in technology design, or at least the assertion that design teams should not work in isolation from end users, has gained popularity over time in numerous subfields of design theory and practice [8]. These include participatory design (PD), user-led innovation, user-centred design (UCD), human-centred design (HCD), inclusive design, and co-design, among others. Participation can also be extended to engagement and interaction between performers and audiences as it has long been explored within digital and performance art [33]. In this workshop we plan to involve participants in the above-mentioned embodied and physical theatre exercises such as viewpoints technique from Anne Bogart and Tina Landau [3].

Finally, this workshop aims to invoke critical reflection and build up on the algorithmic literacy of the participants. Alvarado and Waern describe Algorithmic Experience (AX) as an "analytic tool for approaching a user-centred perspective on algorithms, how users perceive them and how to design better experiences with them" [1]. While their focus is in social media platforms, some of the design areas for Algorithmic Experience can be more generally applied to technological development that seeks to grow users' understanding of the workings algorithms. Building on AX, Klumbyte et al. propose its integration with Critical Design, particularly in making the societal context and the experience of algorithms explicit [17]. Critical Design together with AX can provide users not only with a more explicit experience of algorithms but also an understanding of its impact in societal contexts.

4 ANTICIPATED OUTCOMES

The anticipated outcomes of this workshop are as follows:

- This workshop will be a pilot to create the design toolkits and participatory co-design methodologies to open up the issues of vulnerability, failure and disobedience as a creative stimulus to robotic design from creative robotic theatre to other areas such as well-being, care and other societal applications.
- This workshop aims to create a framework to define creative robotic theatre, consequently helping to progress the understanding and practice of what creative robotic theatre is and does. This has a direct implication of all aspects of theatre that engage with and use technology.
- We aim to publish the outcome of this workshop in a special issue of a journal to cover various aspects of the development of creative robotics theatre. The call for papers for our special issue will include various perspectives embedded within this project and provide space for new unseen insights.
- Investigate techniques to explore alternative forms of embodied AI/robots which move beyond the current trends, which mostly focus on the anthropomorphic. In this workshop, we will concentrate on AI/robotic embodied forms and their potential use in theatre and performance.
- Through play and co-design audiences may discover the value of process-led approaches to creative robotic theatre, potentially facilitating new ideas and approaches within their own practices. The workshop will provide actors, audiences, technologists, and conference attendees in general an opportunity to work together in the creation of meaning within the confines of creative robotic theatre.

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