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A Review of the Ambit of Politics in Social Robotics

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Abstract

This article reviews the range of currently held positions on the politics of social robotics for skill augmentation of children with autism and other brain disabilities. Publications from peer-reviewed journals and conference proceedings were analyzed. From these articles categorizations were accorded into three emerging themes on the politics of social robotics which are, influence, acceptance and adoption. The findings indicated that the social skilling of brain-impaired children are implicated but not present in the development and design process of the robots. Instead, the human social skills were assigned to the capability and general features of the robots. The need for social robots is in tandem with societal changes and the increased demographics as well as demands from the healthcare industry. The conceptualization of brain-impaired children is plagued with stereotypical views that they are both mentally and physically handicapped, helpless, require round-the-clock care and in need of robotic assistance when humans fail. Depending on the nation status, the influence, acceptance and adoption of social robotics are indeed political and the success of science for society needs has to be re-examined and perhaps redefined in order to reap the return on investment of the robot production.

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1. Introduction

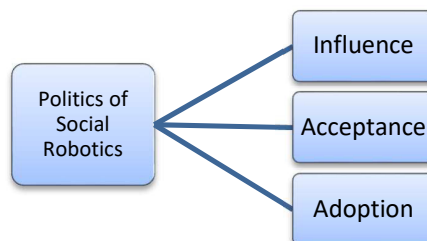
Assistive technologies in the form of robots or humanoids have invaded modern societies throughout the world¹. The pervasive nature of robots in human households have become more prominent particularly in healthcare. As science and technology continue to be improved and innovated, the goal of these machines are ultimately to ease man's existence towards well-being and quality of life. The assimilation of technologies in our daily lives are taken for granted for some humans. The most glaring would be in information and communication technologies (ICT), of which form the foundation of robotic system². Hence, the motivation for this paper is the influence level of accepting and adopting assistance technology into a conservative society, for example in South East Asia.

With robots becoming socially commonplace, the tendency to rely of machines for people with disabilities are positively forecasted^{2,3}. Another projected area for robot assimilation in human households would be in spirituality⁴. In fact, Goldsmith's² research project forecasted that "robots will surpass human capabilities both mentally and physically by 2050". Yet the politics of social robotics in terms of influence, acceptance and adoption lacks in literature. In understanding the term "politics" for this article, a clear definition includes how an assistive technology can persuade society's to allow them to be domestically trained and be part of the household. In the case of household, again a clear definition of scope is important where for this article, the household should include children with various brain impairments especially autism. Another important limitation with regards to literature review would be households in developing countries in Asia. As reported by Mavridis et al⁵, aside from income, cultural idiosyncrasies is the main barrier in robot or humanoid acceptance and adoption in a conservative society. Furthermore, with mentally disabled children at stake, the support from the parents or guardians are important in successfully having the robot assisting with the rehabilitation process. However, Tung's⁶ study showed that perceptions from normal children clearly indicated preferences with the robot's anthropomorphic appearance. As such, the politics of influence, acceptance and adoption of social robotics is crucial in proving the goal of assistive technology innovation.

2. Methodology

In circumventing the variables for politics in social robotics, the technology acceptance model (TAM) provided the theoretical basis. However, the variables of influence, acceptance and adoption were generally pre-identified from interviews in prior studies^{7,8} (see Fig. 1). In the TAM model, two external variables determined technology acceptance. They are perceived usefulness and perceived ease of use. However, the TAM model is more suited for information systems evaluation⁹. Nonetheless, the variables on acceptance and adoption are relevant for social robotics as they are interpreted in a different technological scope. Another theory that again, overlaps the three sub-variables from politics is the diffusion of innovations. Within the scope of social robotics adoption, this theory is more relevant than the TAM model as the diffusion process is communicated over time in a social system¹⁰. Moreover, the social system constructed in the diffusion of innovation theory can be interpreted as influence.

Nevertheless, as this is a review article, the main method is through literature search and analysis. More than 100 articles were reviewed to ensure rigor and conformance to the ambit of politics in social robotics. However, only 15 of the significant sources were identified as shown in the findings section.



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