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## Companion Robot for Children in Paediatric Care to Comfort Their Mood

*Proceedings of the 6th International Conference on Multidisciplinary Approaches (iCMA) 2019 | Faculty of Graduate Studies, University of Sri Jayewardenepura*

Posted: 2 Dec 2019

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Date Written: December 2, 2019

### Abstract

This research includes the design of the companion robot that designed for children in paediatric care which can provide attractive interactions and comfort them in the paediatric care context. Many Children are stressed, nervous, frightened and felt unsafe at hospitals. In the prevailing systems, a caregiver must be at the remote accessing end and decide the behaviours manually, which gives a delay to get a response. Furthermore, when the caregiver is absent, robot becomes a dummy. Considering that, the robot is designed with a soft: wool-like cloth as the skin and smooth movements to make the robot look more friendly. A minimalistic design is used, and the structure is designed to do flexible movements. Colourful and cute appearance is used in the design to attract the children and to lighten up the mood. Child's affective state is analysed using a computer vision algorithm and a machine-learning algorithm to decide the action of the robot. Interaction is mainly carried out using eyes and nonverbal communication. For the initial pilot user study, ten children have participated. A Questionnaire was given to the caretaker's after the children interact with the robot, and their affective state was analysed, and the overall affective state of the children when they were near the robot was 86% positive. A camera was used from outside to observe the interactions of the children with the robot. According to the collected data and observations of the child's interactions with the robot, a child is more likely to be near the robot and interact with the robot. We learned that many changes of affective state occurred. We learned that many changes of affective state occurred when the child interacts with the robot. Thus, we would develop an intelligent system to decide the next action of the robot to interact better and assist the child to make the child's affective state a positive one.

**Keywords:** paediatric care, human-robot interaction, nonverbal communication, companion robot, healthcare robotics, child-robot interaction[Suggested Citation](#) >[Show Contact Information](#) >

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