Face and Upper-Body Emotion Recognition Using Service Robot's Eyes in a Domestic Environment

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Abstract

The population of the elderly/disabled people of the world is increasing rapidly. Taking care of these people has become a major issue since lack of professional caregivers or family members. Hence, the only feasible solution for this is using humanoid service robots. Available care-giving service robots lack the proper human emotion recognition. Hence, they cannot communicate with people as humans do. In addition, it is not preferable to people when robots are not androids. Therefore, this paper has proposed a method to recognize a face and upper-body emotions by using service robot's eyes. The service robot's eyes model is able to track a particular person in a domestic environment to mimic human eyes' behavior while providing visual feed for the system to recognize emotions. Face emotional expressions and upper-body gestures are recognized by using supervised learning methods. Finally, the results show that the trained system recognizes the emotions effectively in the domestic environment for a particular person.

Keywords: Face Recognition, upper-body recognition, emotion recognition, humanoid service robots, robot eyes.