PROGRAMMING THE NAO ROBOT FOR HUMAN INTERACTION

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Humanoid robotics is an emerging and challenging research field, which has received significant attention during the past years and will continue to play a central role in robotics research and in many applications of the 21st century**.** Designed to entertain and interact with humans, Nao is one of the most common robotic platforms used in research and education today. This project consists in the implementation of 2 software applications for the Aldebaran Robotics NAO Humanoid Robot, in order to increase the robot's agility and mobility, and expand its human interaction possibilities. The paper has two parts, the description of the application that allows the user to control the robot's movement from a remote computer using a keyboard and image processing for an application that enables the robot to engage in a "Tic-Tac-Toe" game with the user. The two key development environments that are used are the NAOqi framework and its APIs (mainly ALMotion, ALMemory, ALRobotPosture, ALSonar modules) and OpenCV. The project was completed with the Java language under Windows 10 operating system and a 5th generation NAO robot with an NAOqi 2.1 operating system.

Keywords: *NAO robot, image processing, human-robot interaction, navigation.*

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