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SOFTWARE AND HARDWARE OF COMPUTER INTELLECTUAL CONTROL FOR MOBILE ROBOT MANIPULATOR

A trend in today's mobile robotics is to perform the control of mobile robots in a distributed fashion. This control scheme requires a wireless communication network connecting the robot to the other existing devices in the environment. Wi-Fi and Bluetooth are examples of such networks. Ad-hoc networks such as wireless sensor networks (WSN) can be deployed instantly and offer a wide coverage by employing a large number of communicating nodes. In addition to provide a communication link to the robots, a WSN can aid the robot's navigation, localization, and also enhance its sensory capabilities.

Recent developments in the artificial intelligence (AI) and robotics has enabled technical objects to be integrated into the business process to help stimulate the workers' imaginations and improve their output. The robotics cannot substitute professionals but it can help perfect whatever process it's initiated into reducing instances of human error thereby saving resources, work hours and energy.

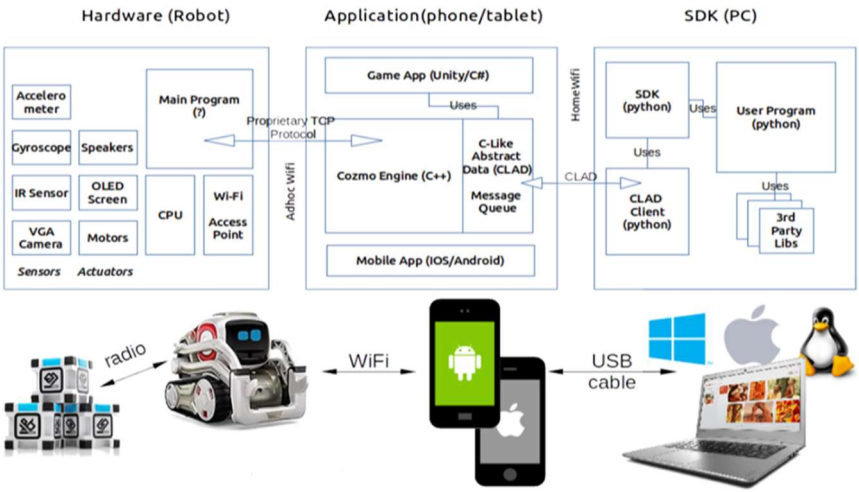
In this paper, we study a mobile robot Cozmo as an example. Robot Cozmo is new, it was first shipped in mid-October 2016, accompanied by an open source python SDK[1]. More features are still being developed by various users and tech-startups, this robot will allow you to enter directly into the world of human interaction with the robot and AI. Cozmo explores the environment, learns, plans its actions, and reacts like a living creature. Cozmo's little mobile robot was designed by former Pixar animators. Using the Code Labs, a simple and intuitive visual programming language based on 'Scratch Blocks', programmers will be

able to develop human behaviors and third-party applications using their Python SDK.

The main purpose of this work is to utilize Cozmo's capabilities to explore a new means of control of robots, the inner workings of machine learning and artificial intelligence, hands-on experience in the aforementioned fields is very paramount to creativity, using the scripting language 'python' Cozmo can be programmed to do pretty much anything. Due to Cozmo's more elementary audience the python code is translated into a simpler programming language 'Scratch blocks' which was developed by MIT enabling users to understand Cozmo's functionalities. These functionalities are wrapped up in graphical blocks of code that students drag and drop onto the application's interface, the reason behind this is to guide students through the most basic coding concepts and lead them to advanced languages like python and Cowing to its Wall-E inspired personality, the earlier students can start making use of the functionalities the easier it will be for them to really understand how these innovative technologies operate.

In terms of locomotion, Cozmo as a robot is not immune to the generic problems that other robots possess: The Path planning, the Search problem, path planning and the search problem. The techniques students employ to make cozmo maneuver these generic problems will be explained and plays a huge part in the educational process as the student is able to have a hands-on experience and well informed approach to locomotion in robots.

There are problems with some affecting interactive operation and others related to locomotion in controlling robots some of which are highlighted below, one of the aims is to solve some of these problems using Cozmo as a test robot, and the concepts could be applied to some other prototype in other fields such as steering systems in autonomous vehicles and drones. Cozmo structure is shown in Figure.



Img. 1. Cozmo Architecture

This robot allow work with real hardware in order to better apply these concepts to help alleviate the challenges of the society, they provide a brief but intensive treatment of a cross-section of the key elements of Robotics, Robot vision, AI and cognitive science[2].

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LITERATURE

1. Anki Cozmo - Python SDK. [Electronic resource]. – Access mode https://github.com/anki/cozmo-python-sdk
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