

Abstract

ADVANCED HUMANOID ROBOTS WITH BUILT IN COMPUTER FOR REAL TIME APPLICATIONS

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A coordinated control system designed with a small form factor that can be located within a Robot or an automated inline manufacturing system, comprising: An on board Advanced distributed control hardware configured with Artificial intelligence enabled processors

10 incorporated within a “System on Module (SOM)” board, each SOM comprising four processors or nodes; interfaced with a cameras, Motors, General purpose I/O through I2C expander, audio interface, internet, Wireless communication such as Wifi and Bluetooth to send and receive commands and any other data; electrically connected to a plurality of sensors for perceiving the environment and collecting data from infrared, tactile, proximity and other

15 types of sensors; an external host flashing computer dedicated for uploading/downloading Firmware, Cloning and configuration setup; a Non volatile memory for storing control algorithms, Configuration files and other essential data; a HDMI based user interface for Robot operation, training and setup; USB C or Ethernet based internal star network for high-speed communication bypassing the standard PCI bus interface BUS; an Ethernet switch board

20 enabling multiple boards to access the ethernet for both internal communication within the star network as well as external internet access.

Figure 1