"ARTIFICIAL INTELLIGENCE"

Project report

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ABSTRACT

This Project consists of building a Humanoid, its Mechanical structure, and then controlling it using Electronics. The Humanoid is developed in analogy to actual human motions and activities.

The Mechanical modules include building the movement structures, building the Skeleton which forms the chassis and the central part of the Humanoid. The Arms are built with freedom at 3 points. The points of freedom come from direct analogy to human joints. A Clasper ends the Arm which helps to pick-and-place objects that need to be moved. A Head is formed to support a camera. Free motion in 360 degrees is provided to the Head.

The Electronics is developed to control the Mechanical Structure and execute commands given to it. A mobile Electronic Control System (ECS) is developed to accomplish this. ECS consists of a group of Microcomputers which are assigned tasks. Three Microcomputers control the system parallely, running their assigned tasks. All the Control Electronics and the Power Sources are made mobile and occupy positions on the Mechanical Chassis.

Speech Recognition Engine (SRE) is used to identify the voice commands and guide the ECS to realise whatever was commanded. The Speech Recognition is done through Hidden Markov Model Tool Kit (HTK) on the a Personal Computer (PC). The SRE is trained to identify speech commands that can be used to command the Humanoid to perform a particular operation. The commands are sent through a serial link to the Humanoid. The ECS processes this command and performs the required operation.

Overall Project sums upto 'Building a Humanoid that is self sufficient and commanding it through Speech Recognition'.