AIUB Robotic Crew

Interface Between Hardware & Software

NETWORK ARCHITECTURE DIAGRAM



Here we are using TCP network protocol to communicate with 3 raspberry pi’s and the user control software. Raspberry pi’s are acting as server and the control software is acting as the client. Three raspberry pi’s are serve different purpose. Control software is acting as client.

TASKS OF DIFFERENT RASPBERRY PI’S

1. RASPBERRY PI 1 (Rover movement)

* ARDUINO 1 (Rover movement control)
* It is controlling the rover motors which are responsible for movement of the rover.
* ARDUINO 2 (Hand movement control)
  + This Arduino is controlling the hand of the rover.
* Controlling the other rover basic operation.

1. RASPBERRY PI 2 (Image processing)
   * This raspberry pi is connected with all the camera module.
   * Science task is done here.
   * Secondary database is host in this raspberry pi.
2. RASPBERRY PI 3 (Backup)
   * This raspberry pi will be Standby.
   * If any of Raspberry pi or Arduino is goes down this raspberry pi will be in operation.
   * This Raspberry pi is responsible for all the automated decision.
   * If the rover is disconnected from the base this raspberry pi will get the rover back in the route.
   * It is also responsible for image processing.

NETWORK COMMUNICATION

We are using TCP communication protocol for the communication with all the raspberry pi and the user control software. In this communication protocol we are using a port to pass and receive our data. And to communicate with Arduino and raspberry pi we are using Firmata protocol.

Thank you

Sabbir Ahmed Shourov