IEDatron

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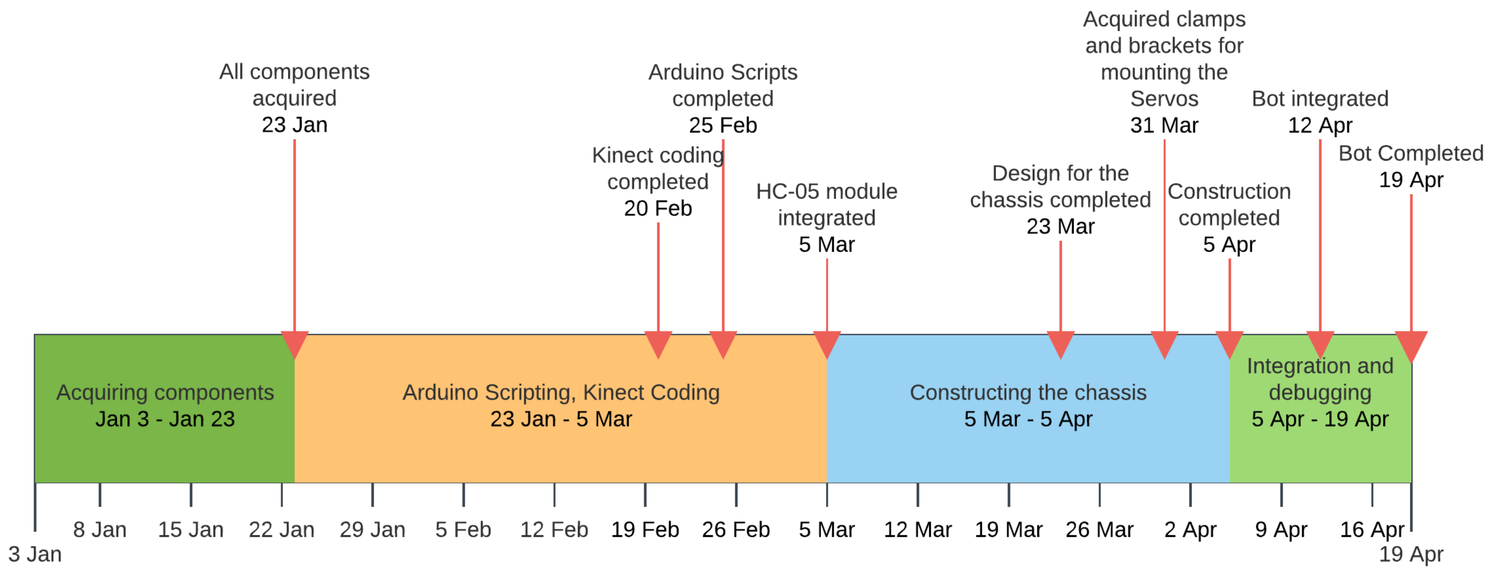
MOTIVATION

Despite the advance technology that we possess today, large parts of the Earth and space alike remain inaccessible to us because of inability of the humans to survive in harsh conditions. This can be changed if we were to replace humans with mechanized robots.

SOLUTION

Artificial Intelligence is not that developed so as to allow robots to react accurately in delicate situations. Hence, this project aims to improve the ability of a human to control a robot, by allowing it to mimic the user's actions!

TIMELINE



EQUIPMENT USED

- Arduino Mega Microcontroller
- Microsoft Kinect sensor and its API
- S3003 FUTABA Servos (10 nos.)
- HC - 05 Bluetooth module
- Turnigy 2200mAh 3S 25-35C Lipo pack
- Lipo Battery tester and charger
- Laptop
- Breadboard
- Jumper Wires
- Oblique U-shaped Aluminium Servo Bracket (2 nos.)
- L-clamp (20 nos.)
- Short U-shape Aluminium Servo Bracket (6 nos.)
- Long U Aluminium Servo Bracket (2 nos.)
- Large U Beam Aluminium Servo Bracket (1 nos.)

IMPLEMENTATION

- The Kinect Sensor records the user's actions and calculates the angles of 10 joints from it.
- The angles are forwarded from the Kinect sensors to the Arduino Mega micro controller mounted on the robot.
- This is done through Bluetooth. The HC-05 Bluetooth module on the robot records the data sent to it from the Kinect.
- The micro controller forwards the angle to the respective Servos.
- The Servos powered by Lipo batteries revolve to the appropriate angles.
- The clamps attached to the Servos revolve along with them, thus, mimicking the user's actions.

SOURCES

- Circuits and VLSI Lab, IIITD
- Lajpat Rai Market, New Delhi
- Robokits India (robokits.co.in)
- Amazon India (online order)
- Hardware Shop, Govindpuri
- Cyborg club inventory, IIITD
- Garage Lab, IIITD

REFERENCES

- Stackoverflow
- Arduino tutorial - https://www.arduino.cc/en/Tutorial/HomePage
- Microsoft Kinect support - https://msdn.microsoft.com/library/dn799271.aspx
- Instructables - http://www.instructables.com/