



VIT[®]

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)
CHENNAI

GESTURE CONTROL ROBOTIC ARM

BCSE421L - ROBOTICS: KINEMATICS, DYNAMICS AND MOTION CONTROL
SLOT: C1+TC1

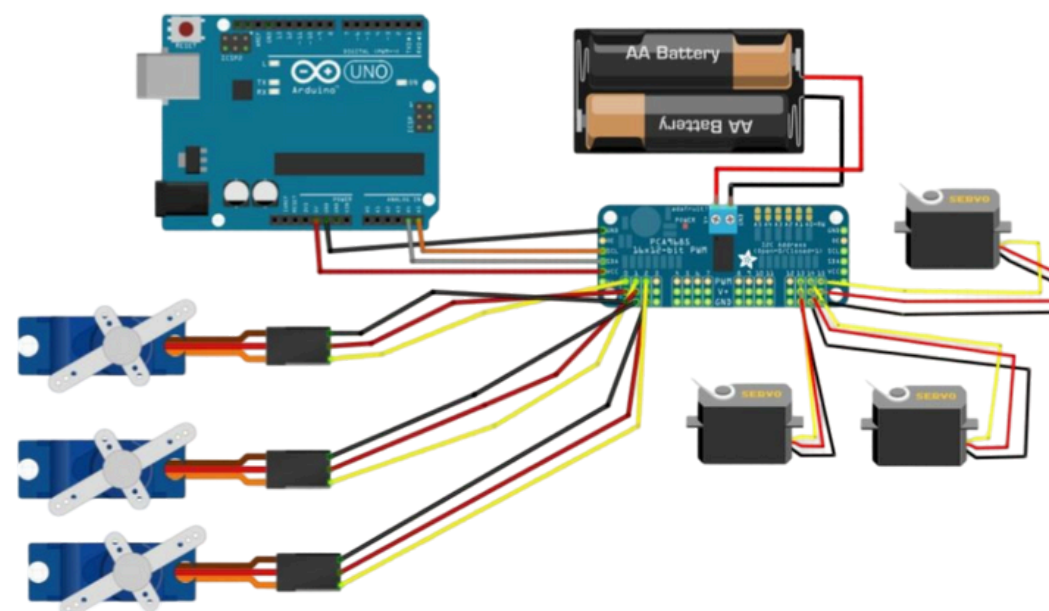
ABSTRACT:

INTRODUCING A CUTTING-EDGE GESTURE-CONTROLLED ROBOTIC ARM THAT COMBINES MACHINE LEARNING AND OPENCV. USING REAL-TIME GESTURE DETECTION THROUGH A CAMERA, THE SYSTEM RECOGNIZES HAND MOVEMENTS AND TRANSLATES THEM INTO PRECISE ARM ACTIONS VIA AN ARDUINO AND INVERSE KINEMATICS. THIS INTEGRATION OF OPENCV AND ADVANCED ALGORITHMS ALLOWS FOR INTUITIVE, ACCURATE CONTROL, OPENING DOORS TO INNOVATIVE APPLICATIONS IN ROBOTICS, AUTOMATION, AND HUMAN-COMPUTER INTERACTION.

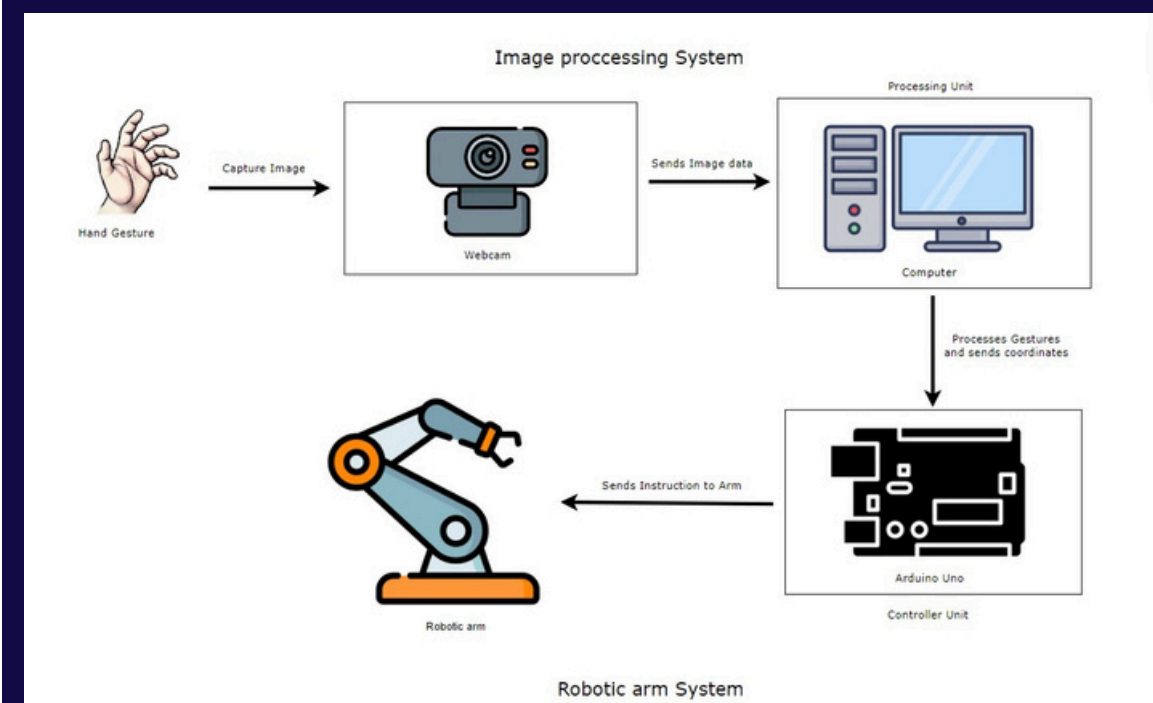
APPLICATION:

- **HEALTHCARE:** ASSISTS IN REHABILITATION AND DAILY TASKS FOR INDIVIDUALS WITH MOBILITY IMPAIRMENTS USING INTUITIVE GESTURE CONTROL.
- **INDUSTRIAL AUTOMATION:** ENABLES CONTACTLESS MACHINE CONTROL IN MANUFACTURING AND HAZARDOUS ENVIRONMENTS FOR IMPROVED SAFETY AND EFFICIENCY.
- **TELESURGERY:** ALLOWS SURGEONS TO PERFORM REMOTE, PRECISE OPERATIONS WITH ROBOTIC ARMS CONTROLLED VIA GESTURES.
- **SPACE EXPLORATION:** FACILITATES REMOTE CONTROL OF ROBOTIC ARMS FOR REPAIRS AND TASKS IN ZERO-GRAVITY ENVIRONMENTS.

CIRCUIT DIAGRAM:



BLOCK DIAGRAM:



MEMBERS :

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