Vision Based 3D Printed Robotic Arm for Marking/Drilling

EXPERIENTIAL LEARNING CENTRE
TIET, PATIALA

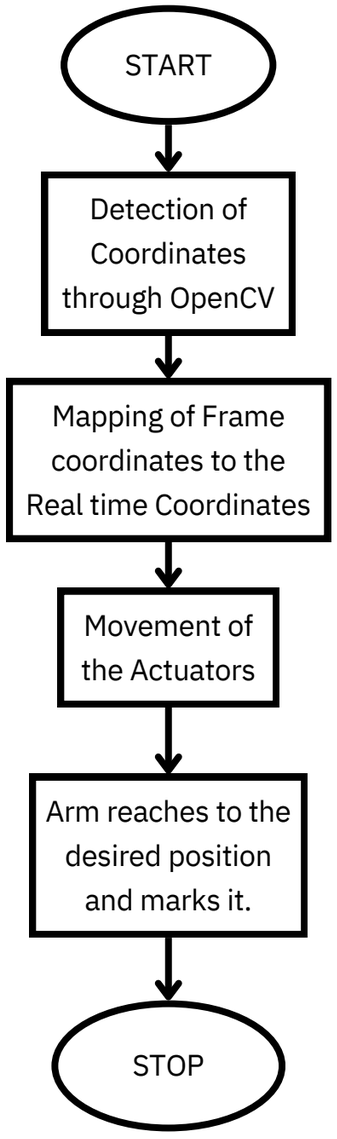
Overview

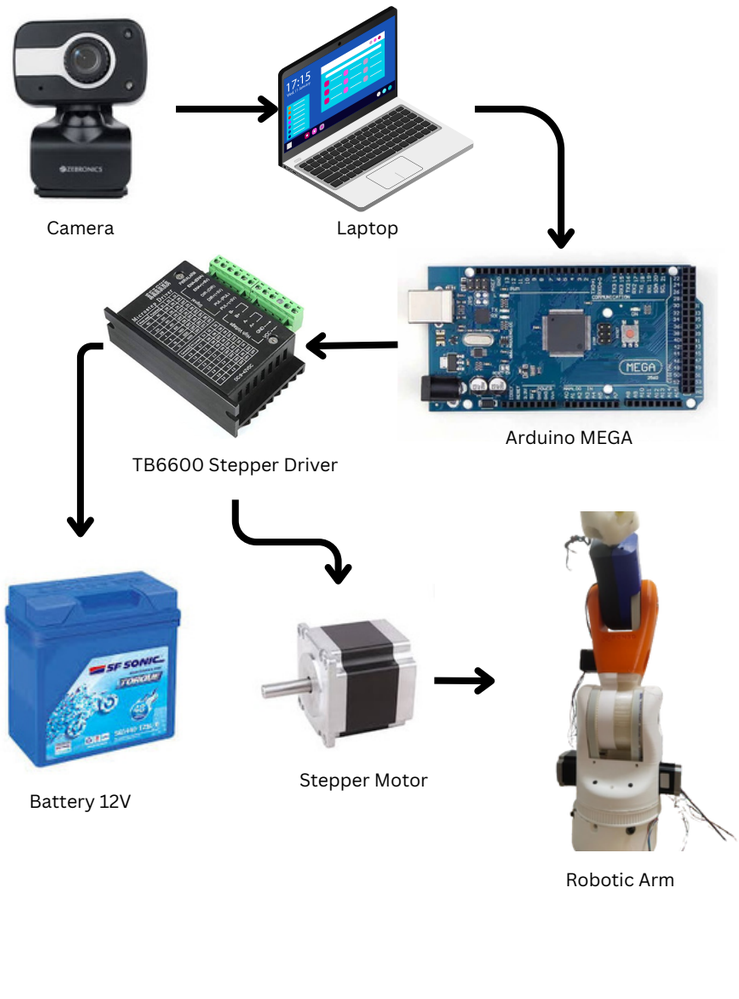
- Neurosurgical brain drilling is skill-dependent, causing variability and risk.
- Neurosurgeons and patients face risks from manual procedures.
- Improved precision and safety will reduce complications.
- A vision-based robotic arm must show higher accuracy and safety.

Objectives

- Refining arm designs with SolidWorks.
- Integrating sensor and motors via Arduino.
- Implement existing movement codes.
- Use OpenCV for real-time detection.
- Integrating above modules for marking/drilling.

Working

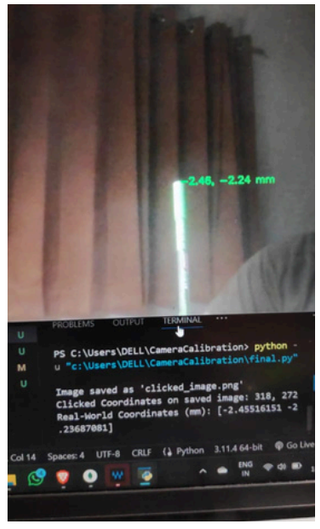




Constraints

- Achieving the required accuracy for neurosurgical tasks.
- Ensuring the system processes images quickly enough for real-time use.
- Adhering to strict safety standards for medical procedures.
- Dealing with the performance limits of sensors and actuators.

Result



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