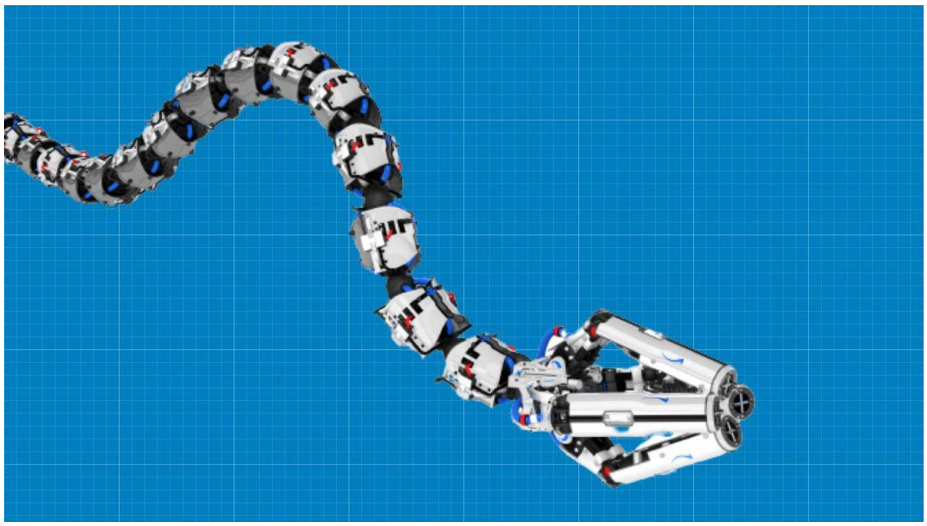
# Discovery Dexterous Robot Arm



**Abstract:**

The need for a Robot to discover the insides of confined spaces – such as Collapsed Buildings, Hazardous Areas and Archeological Sites – has grown. In order to quickly save human lives and focus the efforts of rescuing or discovery teams, a robot is used before the intervention of humans. One of the best robot manipulators used for such a purpose is The Dexterous Robot Arm.

Hence, this project focuses on the design and implementation of a Dexterous Robot Arm equipped with an end-effector camera, which is mechanically designed and simulated using FEA software, then constructed using available 3D-prited materials and Hardware Components. The robot is controlled from a main station to monitor its motion and record its findings.

**Topics:**

1. Studying various types of Robot arms.
2. Types of Dexterous Robot Arms.
3. The forward and inverse kinematics of the structure.
4. The materials and components used.
5. The dynamics and force analysis.
6. The motors and drivers.
7. The close loop position control and controllers used.
8. Implementation and applications.

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