Human Robot Collaboration

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Mechanical Engineering
Assembly / Disassembly Tasks

- High Flexibility
- High Efficiency
- Low Efficiency
- Low flexibility
- High labor cost
- High capital cost
Conceptual Framework:

1- Action Recognition/Intention Prediction
2- Localization & Path Planning
3- Object Detection
4- Grasping
Drone Design:

- **Propellers**
- **Motor**
- **Flight Controller**
- **Battery**
- **GPS**
- **Speed Controller**
- **Radio Telemetry**
- **Gimbal & Camera**
- **Frame**
Mission:
1- Go Up
2- Position 1 (P1)
3- Position 2 (P2)
4- Stay for 5 sec
4- Position 3 (P3)
5- Return to Position 1
6- Land
Grasping Mechanism

Ascension Mechanisms:
Scissor Lift Mechanism

Gripper Mechanism:
Mantis Claw
Two Finger Gripper

Lift Mechanism:
Fin Ray Gripper
Gecko Adhesive Gripper

Robotic Arm
Future Works:

1- Camera Integration
2- Grasping Mechanism Integration
3- Indoor Localization
4- Path Planning
5- Indoor Testing

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Thank you!