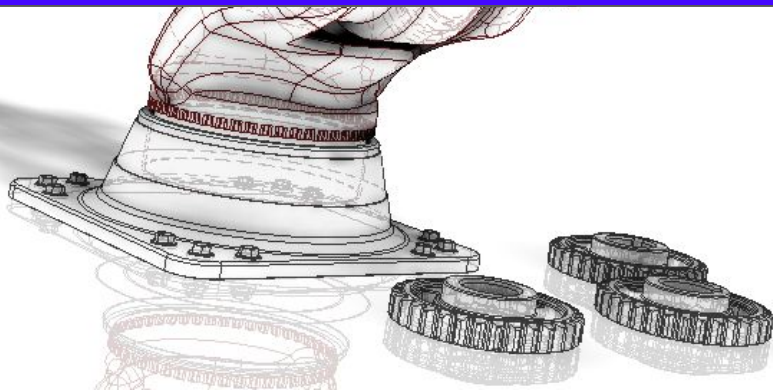


# Applications

# Robotics in Industry



# Robots Vs Humans

**There is a lot to consider when deciding if a human task should be replaced with automation or robotics:**

-Several of these reasons center around reducing cost, increasing productivity, and ethics.

## **Reasons of using Robots in Industry:**

- Mass Production and Repeatability
- High Dependability
- Ease of Upgrade (New Skills)
- Speed and Accuracy
- High Payload Capability
- No Cognitive Bias
- Ability to Retain Complex sets of Instructions
- Reduced Labor Costs
- Hazardous Tasks
- Expendable
- Complex Operations
- Predictability
- Compliance to Instructions



# Robots Applications and Skills

## Common Robots Applications:

### -Welding Examples

*-MIG, TIG, Arc Welding*

*-Spot Welding*

*-Plasma Cutting*

*-Resistance Welding*

### -Material Handling Examples

*-Machine Tending*

*-Dispensing*

*-Palletizing*

*-Packaging*

*-Pick and Place*

*-Part Transfer*

### -Material Removal Examples

*-Cutting*

*-Drilling*

*-Milling*

*-Routing*

*-Waterjet Cutting*

*Laser Cutting*

*-Grinding/Deburring/Sanding/Polishing*



# Robots Applications and Skills

## Common Robots Applications:

### -Coating Examples

*-Painting*

*-Powder Coating*

*-Coating*

*-Shell Coating*

*-Degreasing*

### -Other Examples

*-Vision and Inspection*

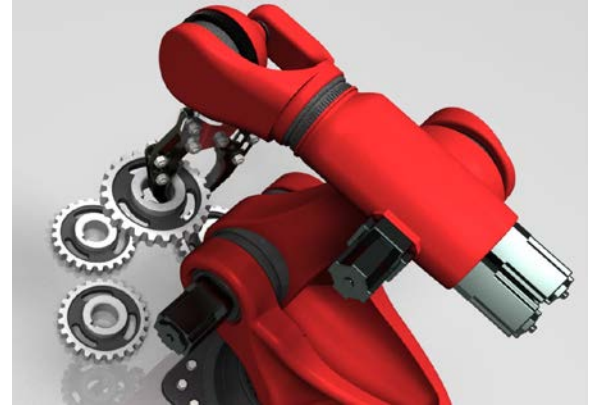
*-Sealing*



# Robots Applications and Skills

## Pick and Place Robots

*Pick and Place is defined as retrieving parts from one location and consistently placing them in a new location. This process can be extremely fast and very repeatable. Pick and place robots are used to automate and speed up repetitive operations which in turn can increase production rates and lower product costs.*



*Examples: Installing electrical components, loading and unloading machines, retrieving items from storage and placing them in packaging, assembling parts*



# Robots Applications and Skills

## Pick and Place EoAT

*Pick and Place robots can be outfitted with a wide variety of End of Arm Tooling (EoAT). This flexibility greatly increases the range of applications.*

*Robots best suited for Pick and Place: SCARA, Delta, Cartesian, Jointed/Articulated Arm*

*Examples: Mechanical Grippers, Pneumatic Suction Cups, Vacuum Grippers, Electromagnetics, Soft Touch Pneumatic Grippers, Bag Grippers*



# Robots Applications and Skills

## Palletizing Robots

*Palletizing robots are used to automate the process of loading and unloading parts, containers, boxes or like items onto and off of pallets for storage and shipping.*

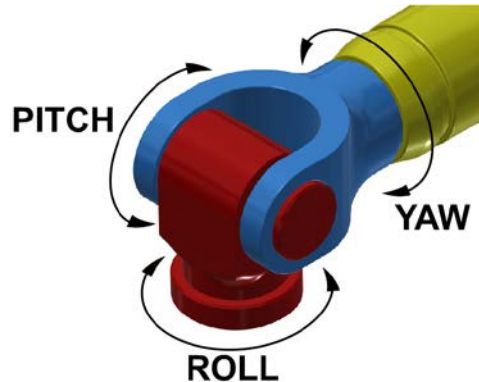
*Palletizing robots typically have a large range of motion and heavy payload capability. They can often be seen in the shipping or receiving department of most factories.*



# Robots Applications and Skills

## Palletizing Robots - Gripper Roll Angle

*Due to the fact that most packaging containers are square, palletizing robots need to have the ability to adjust the EoAT's roll angle. Adjusting the roll angle is used to line up and nest the packages onto the pallet to minimize lost space and increase stability when stacking items onto a pallet.*





# Resources

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