
Group 11 :

Seoul Robotics High School

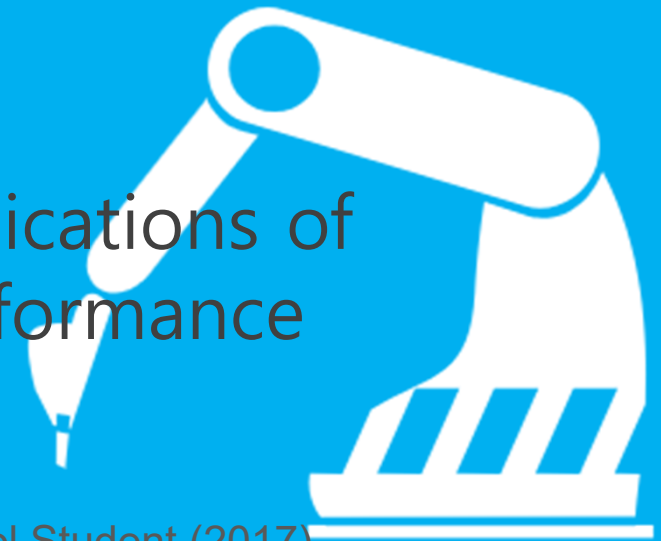
| Speaker |

Co Eugene, Choi Yeonwoo

| Theme 2 |

Relation between applications of robots and their performance

1) Manufacturing use



Index

1) Industrial Robot Market Analysis



2) Development of Industrial Robot



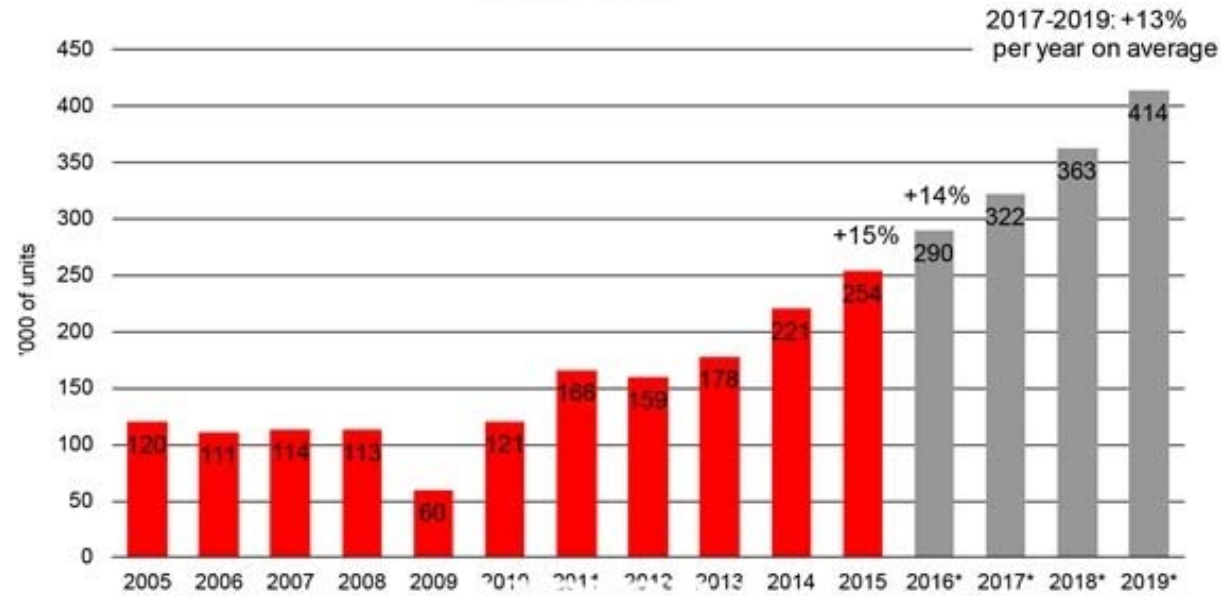
3) Expectation of the near future





1. Industrial Robot Market Analysis

Worldwide annual supply of industrial robots
2001 - 2019*



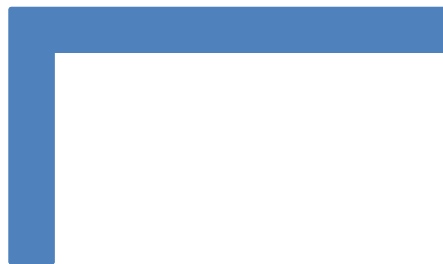
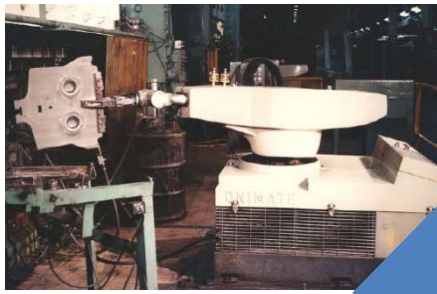
*forecast

Source: IFR World Robotics 2016

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1. Industrial Robot Market Analysis

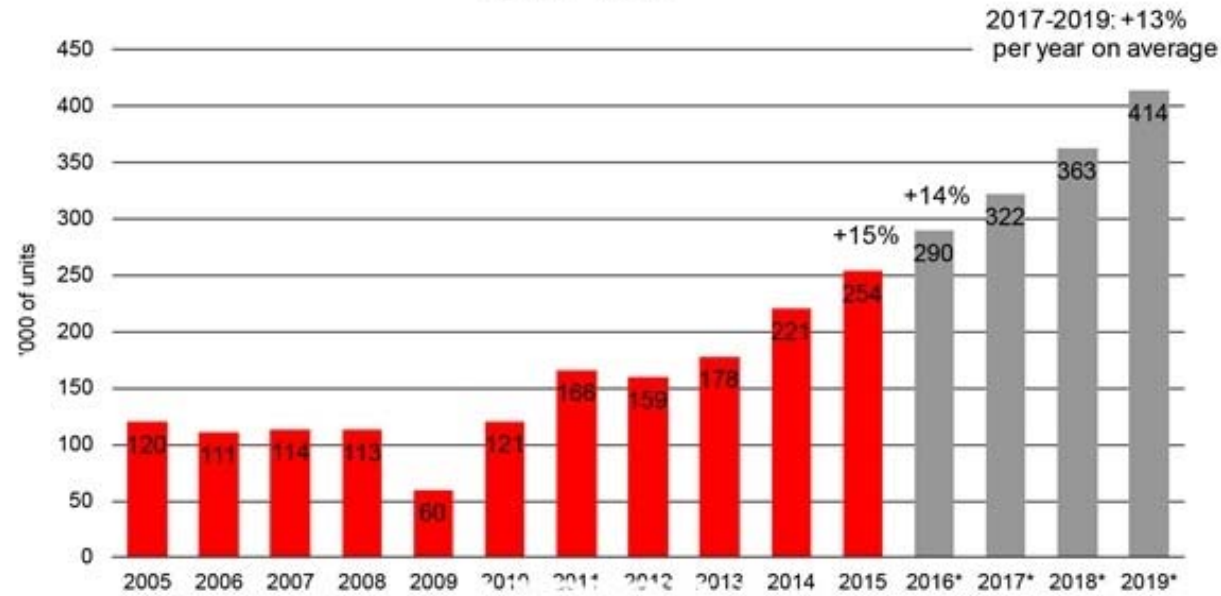


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1. Industrial Robot Market Analysis

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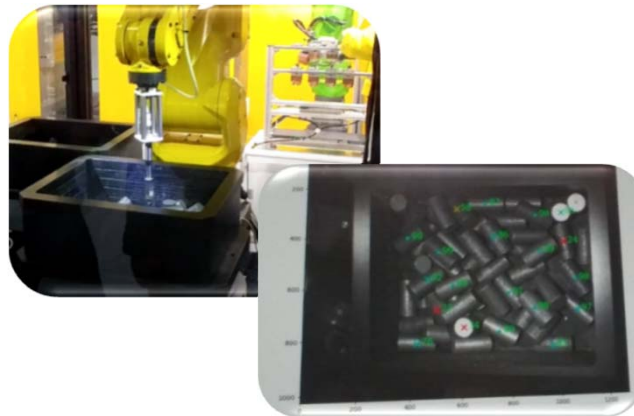
Source: IFR World Robotics 2016

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2. Development of Industrial Robot



Vision
Sensor -
MURTA



3D Sensor
-FANUC

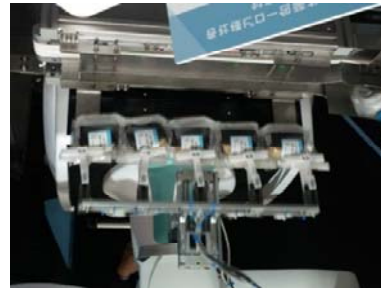
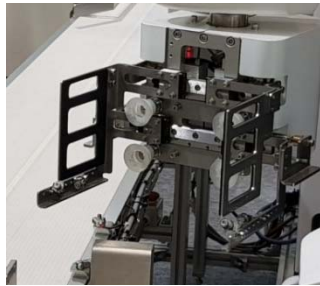


Force
Sensor
-ESTORQ

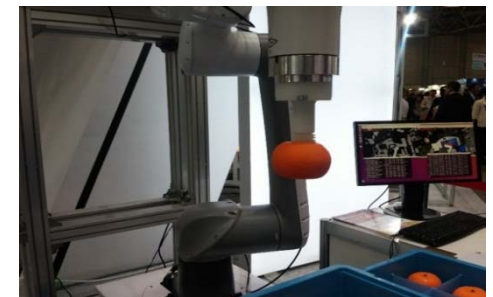
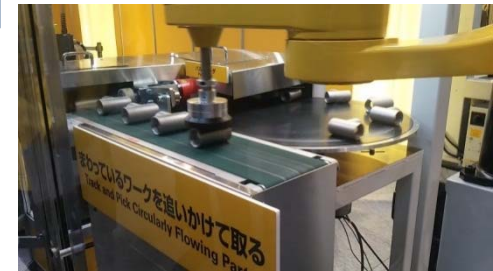
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2. Development of Industrial Robot



Gripper



Vacuum adsorptic



Weldin



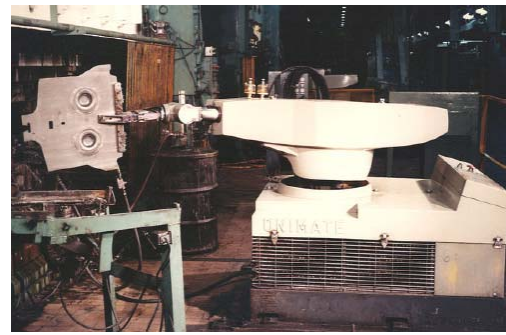
Vision sensor

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2. Development of Industrial Robot

Past



-Normal speed, precision

Ex) Speed ↓
precision ↑

Present



-speed, precision

Ex) Speed ↑
precision ↑

Future



2. Development of Industrial Robot



Vertical articulated robots(FANAC)

-Characteristics : Several joints. similar to the human arm.

Advantages :

- 1.Capable of complicated operations
2. Quick in speed
3. desired position available at any angle
4. Small volume scale, wide work range

Disadvantages :

Difficult to program and control

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2. Development of Industrial Robot



SCARA robots

Advantages :

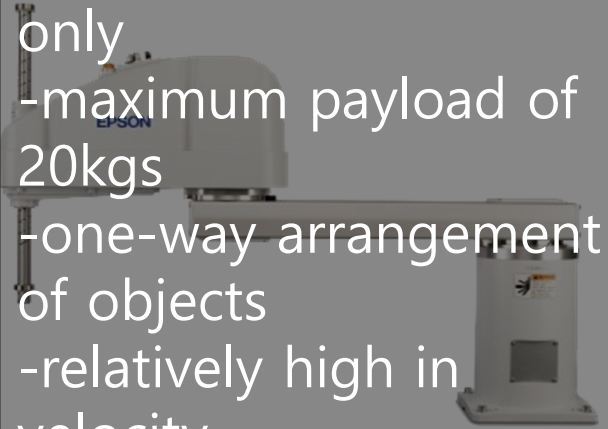
1. fast horizontal movements and flexible
2. High productivity
3. High payload capacity

Disadvantages :

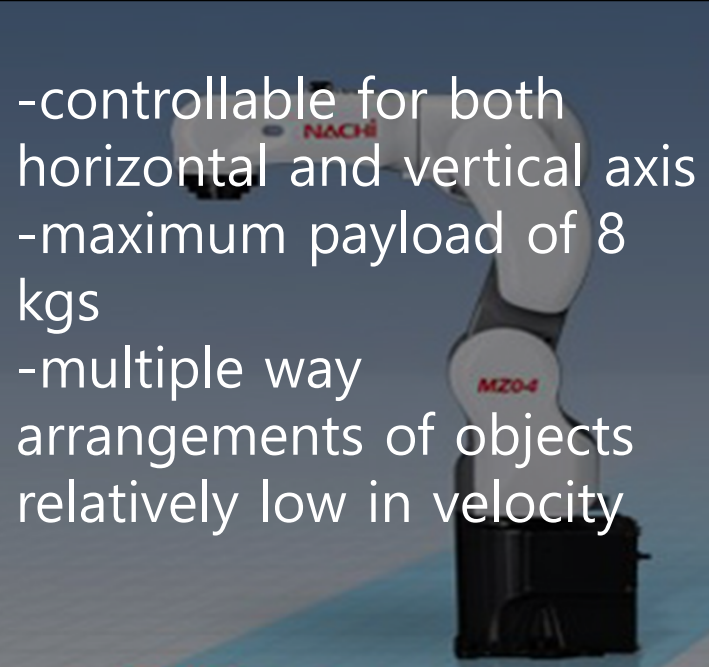
1. one way arrangement of objects Only

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2. Development of Industrial Robot



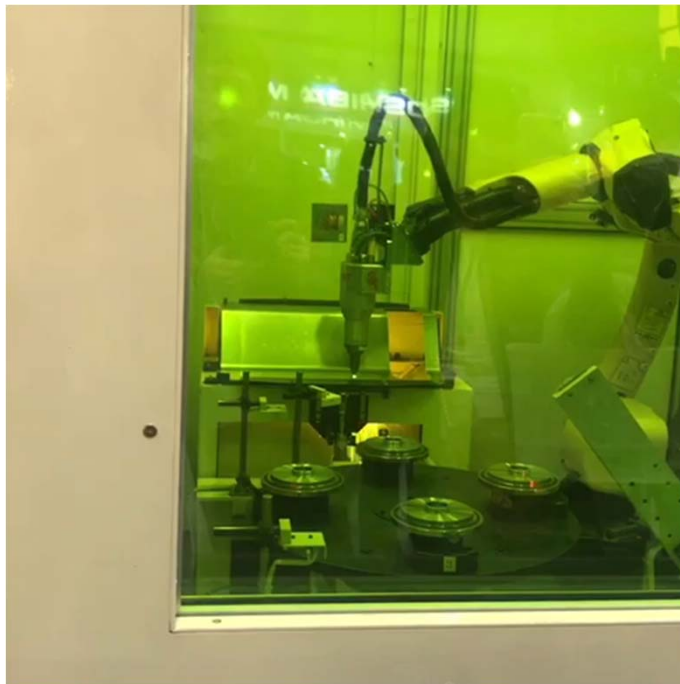
- vertical movements only
- maximum payload of 20kgs
- one-way arrangement of objects
- relatively high in velocity



- controllable for both horizontal and vertical axis
- maximum payload of 8 kgs
- multiple way arrangements of objects
- relatively low in velocity

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2. Development of Industrial Robot



Why laser?

- reduces operation time
- produces fine edges
- instantly concentrates heat into a narrow, confined space.
- laser-depth detecting sensor

- reason of usage: quality check
less emitted heat compared to
arc welding robots

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2. Development of Industrial Robot



Motor assembling robots

- Changes its grippers autonomously in relation to the situation.
- force & vision sensors, reason of usage : the vision sensor indicates the object, and corresponding amount of power is applied by the force sensor.
- controls the gripping force by itself

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2. Development of Industrial Robot



spot welding robots (assembling automobiles)

- When assembling, the end-effectors act in relation to each other.
- When one axis approaches near, the other makes way to prevent any collisions.
- Safety equipments : Fence. Protects all wires by wrapping it and putting it into the robot's exterior shell, making its working environment free from any complications.
- Spot : Pressure is applied when two axis meet, cohering both object together.

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2. Development of Industrial Robot



Epson YUMI

-Reason of usage; force and vision sensor : The vision sensor indicates the object, and corresponding amount of power is applied by the force sensor.

-Characteristics : Applies different amounts of force depending on the hardness of the object using the force sensor.

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2. Development of Industrial Robot



Delta robot

Speedometer : Detects belt velocity

-Reason of usage – vision sensor : To grab the object with the robot's grippers.

why the delta structure?

-Higher efficiency, productivity, and safety

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3.

Expectation of the near future

Collaborative robots : robots designed to interact with humans.

Strong Point

- Production of high quality products
- Guarantee of human safety



Disadvantage

- Slow in velocity
- Low payload capacity

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3. Expectation of Change in Human Life

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RESOLUTION

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THANK YOU

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