



Mu Sigma

Intelligent Machines and Robotics

Do The Math

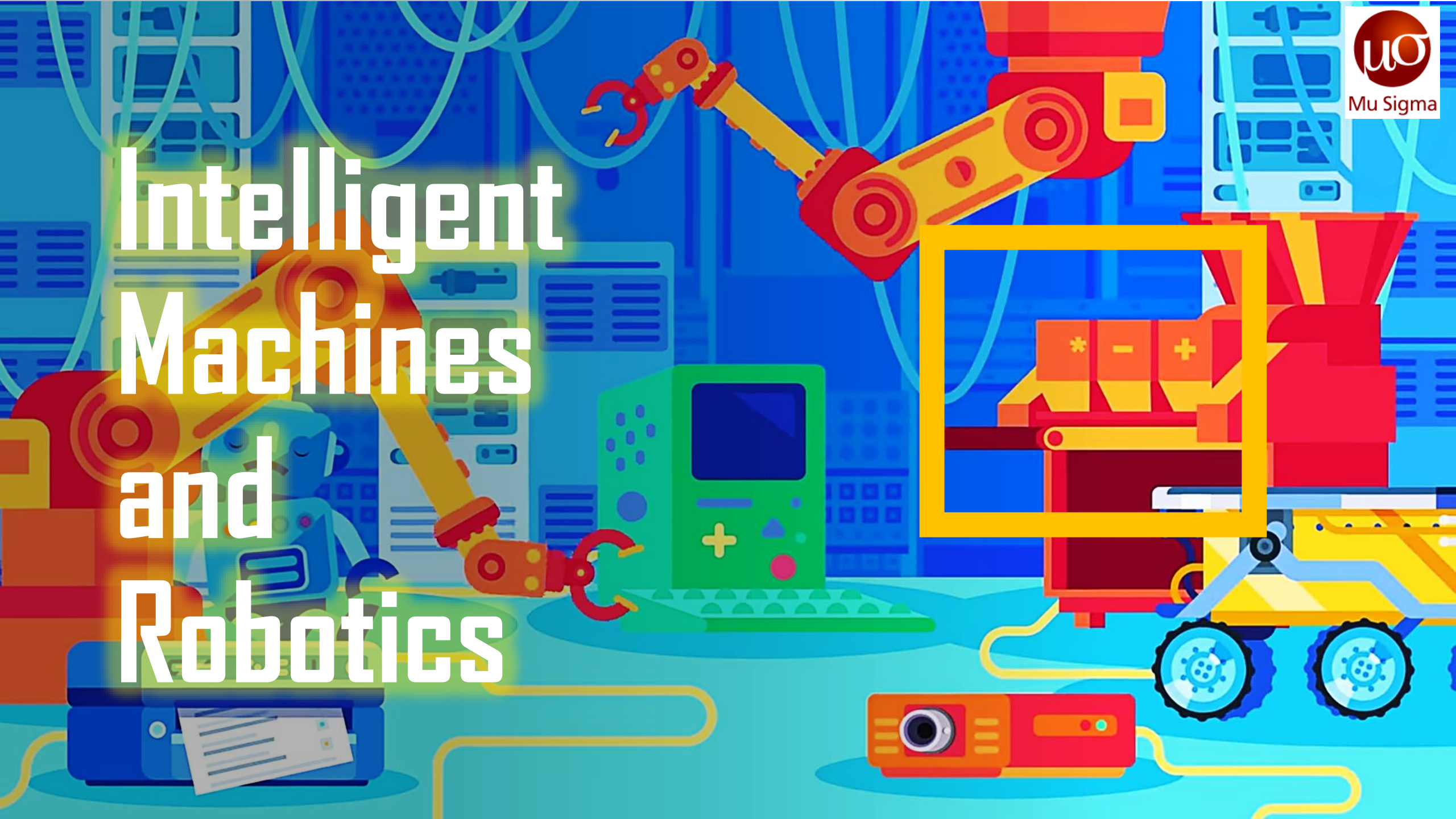
Chicago, IL
Bangalore, India
www.mu-sigma.com

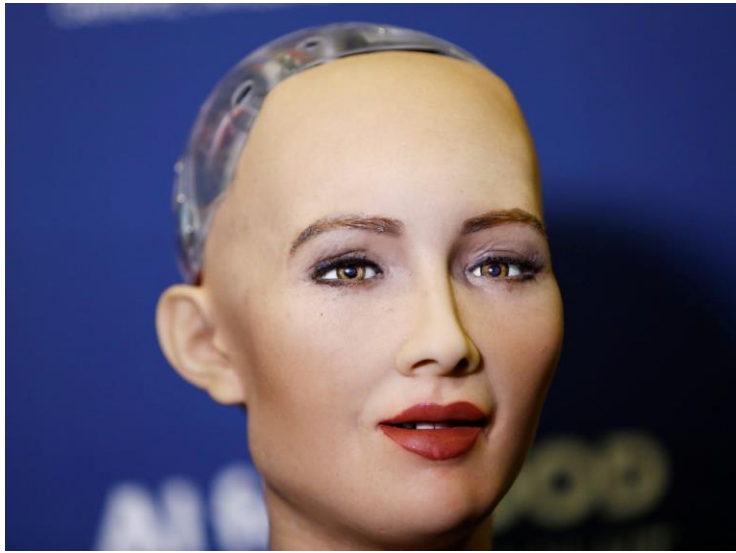
6th August 2020

Proprietary Information

"This document and its attachments are confidential. Any unauthorized copying, disclosure or distribution of the material is strictly forbidden"

Intelligent Machines and Robotics





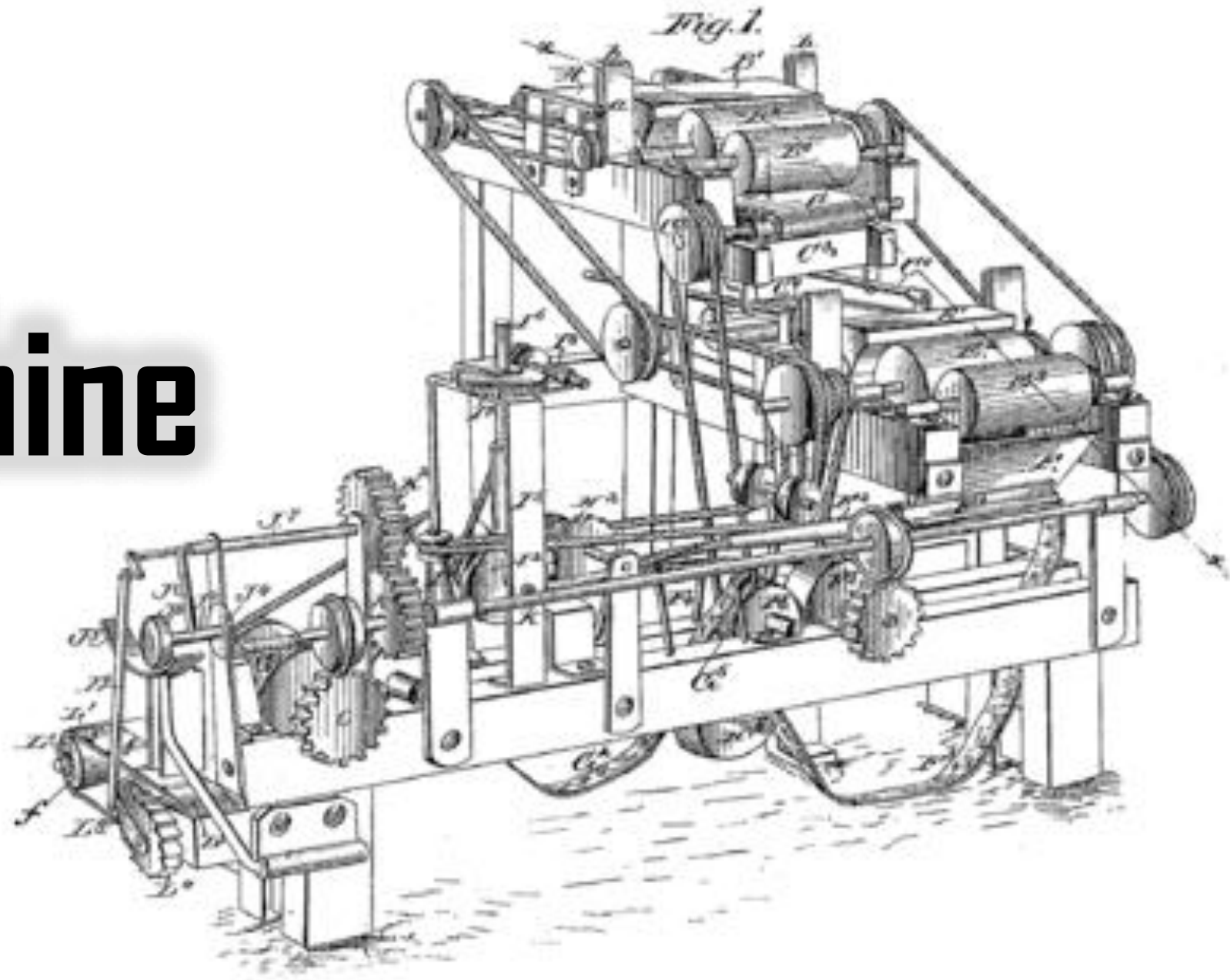
Mu Sigma



Agenda

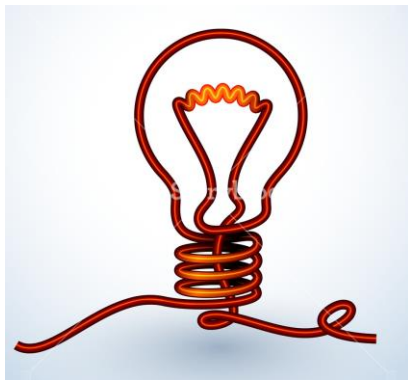
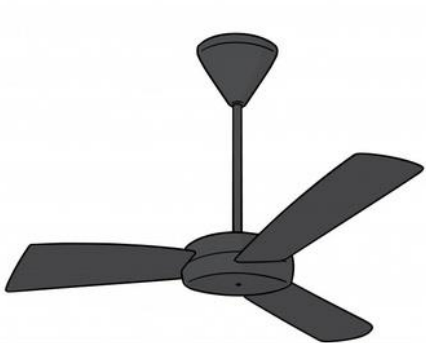
- Introduction – Machine, Intelligence and Robot
- Generalized structure of a robot
- Advancement in Robotics
- Machine or Intelligence Machine?
- Types of Robots

Machine



Machine

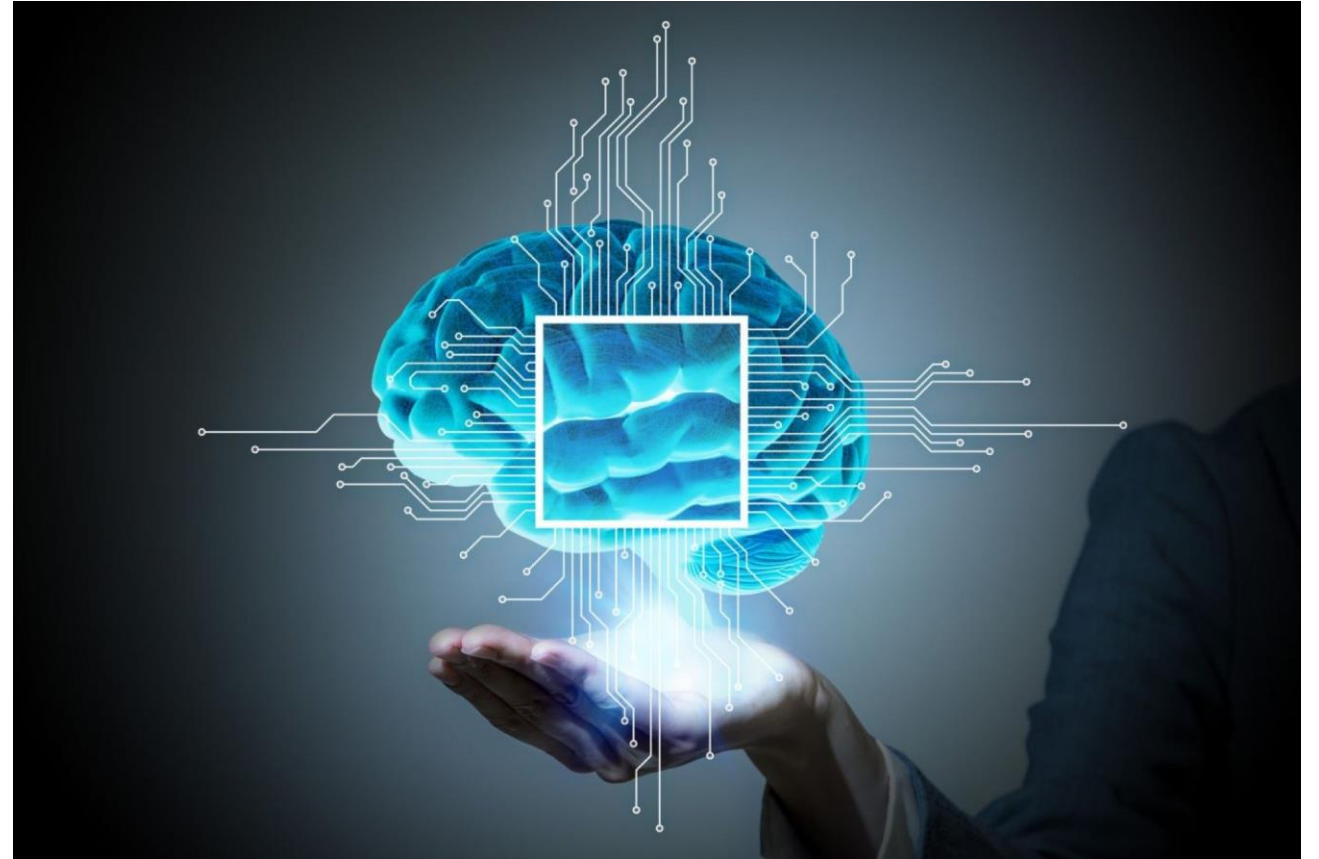
- It is a physical entity which is controlled by users or external automation
- It must be supervised or controlled by others





Intelligence

The ability to acquire and apply knowledge and skills.

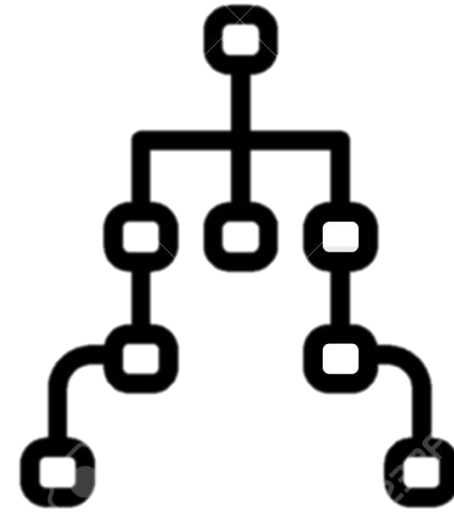


Robot

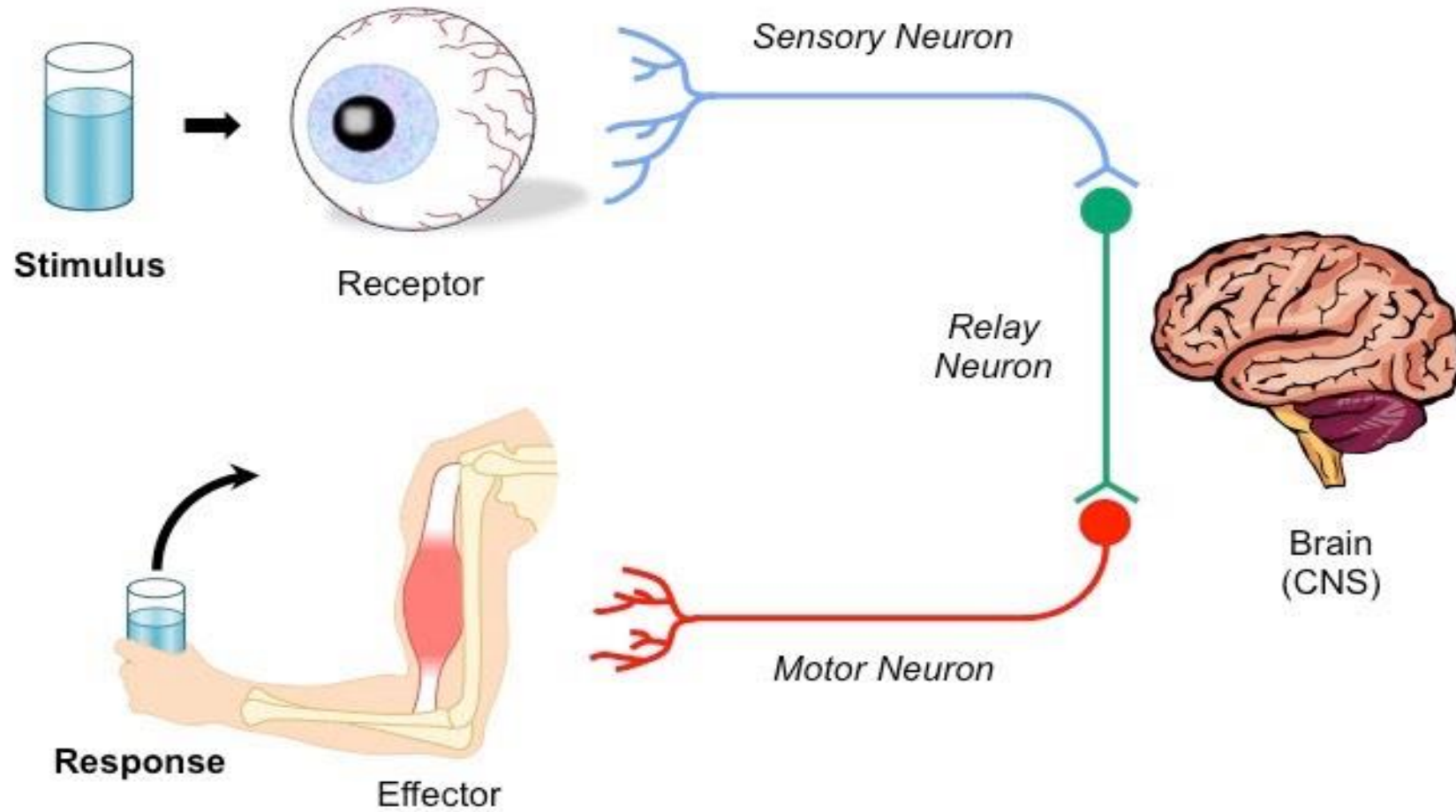
- It is an intelligent machine that replicates certain movements and functions by making self decisions that can also be programmed
- It may convey a sense of intelligence or thought of its own
- Ex: humanoids, UAV(Unmanned Aerial Vehicle) drones, etc.



Structure of Robot

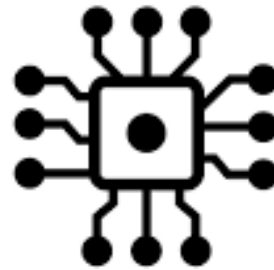
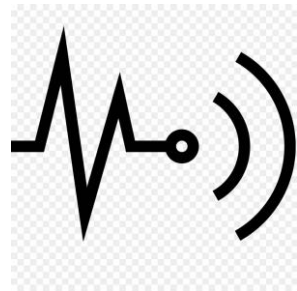


Humans' sense and action



Generalized Structure of a man-made robot

The robot usually has a 3-phase sequence of operations: **Sense (perception)**, **Process (interpretation and planning)**, **Action of some kind**

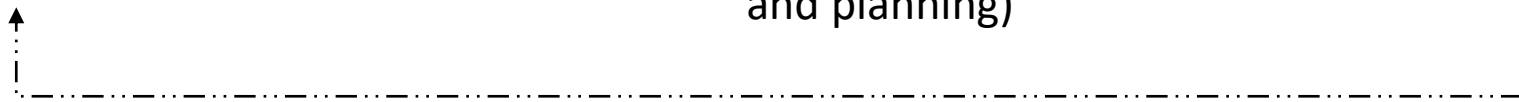


Input from
physical world
(Perception)

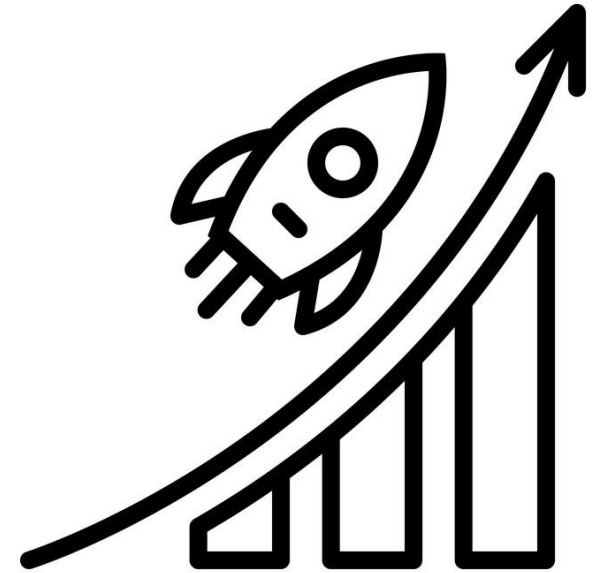
Process
(interpretation
and planning)

Action

Feedback
(optional)



Advancements in Robotics



Industrial Robots



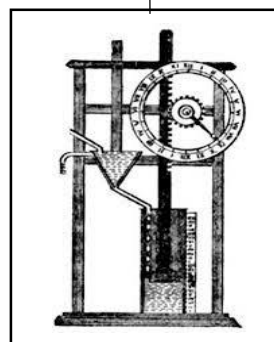
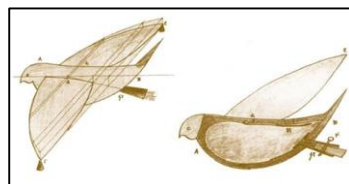
Computer technology



Household robot



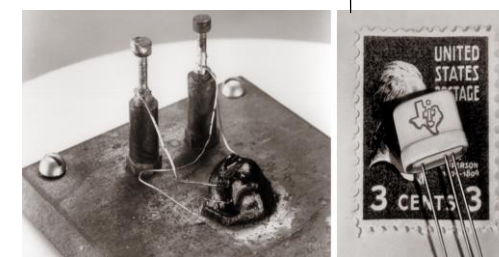
Steam engine powered pigeon



Water clock



RC Submersible boat



Transistor

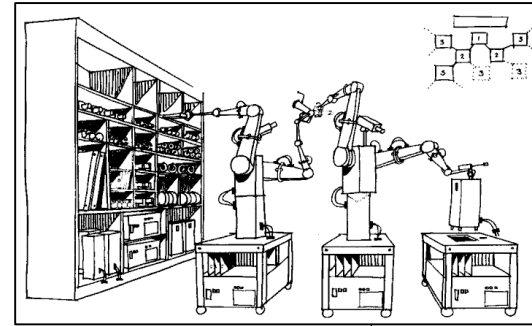
ASIMO



Exoskeleton



Self Replicating Robot



Sophia



1966

1986

1997

2001

2003

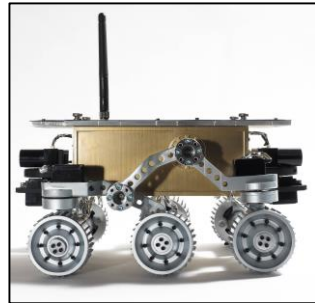
2005

2009

2016



Shakey



Sojourner

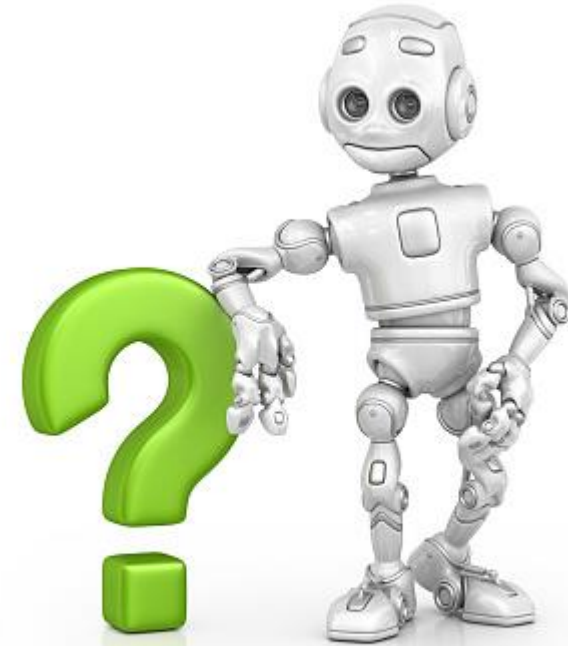


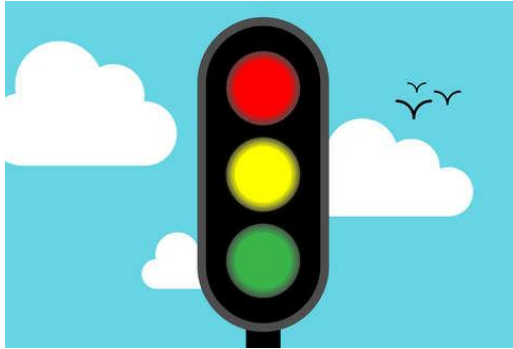
Actroid



Sixth Sense Technology

Machines or Machines with Intelligence?





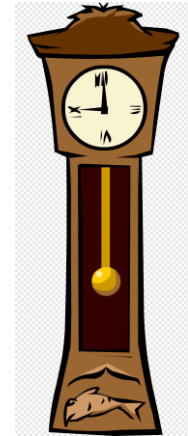
Automated Traffic Lights



ATM



Dry Iron



Pendulum clock



Headphones



Boomerang



Air bags

Types of Robots



Software Robots



Software Robots

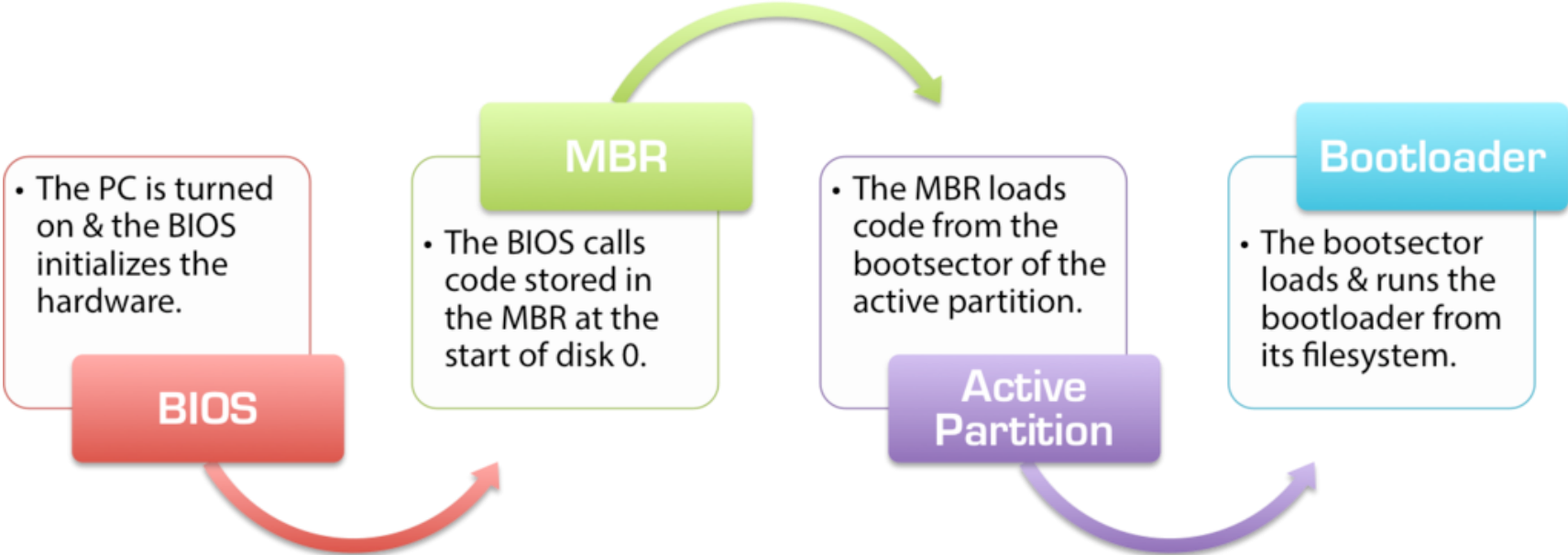
Software Robots

All software processes that are programmed

Software Robotics

It is the use of bot programs to automate computer tasks normally performed by people.

EXAMPLE



Intelligent Software Processes

Login/Logout

Restore pages/files

Save Dialog Box

Restart/Shutdown
Anyway

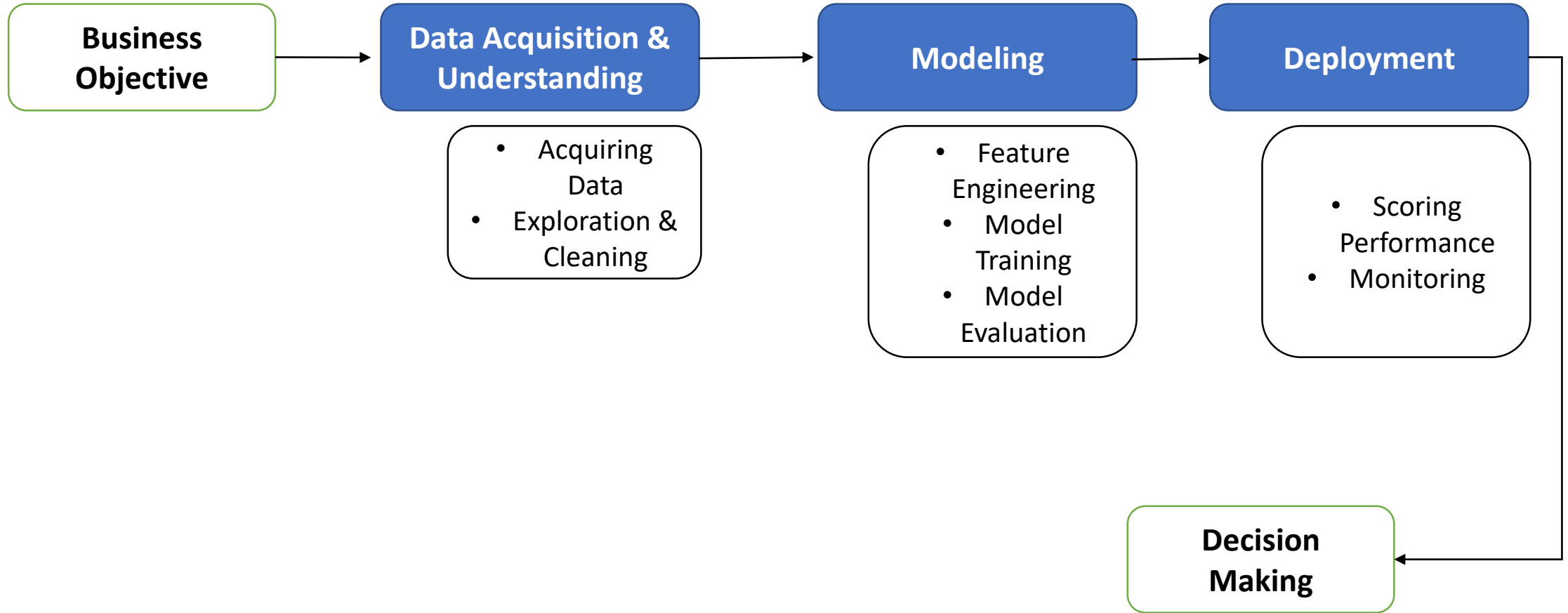
Leave Management
System

Attendance Tracker

Training and
Certification Portal

Payroll Portal

Intelligence in Data Science Processes



Case Study (EY) : Robotics in car insurance

Drivers would be more careful if they know that risk in driving is associated with increase in premium

- A sensor device connected to car port to measure and send signals on the car braking, turns, acceleration, and what time of day the insured is driving
- The sensor device uploads the related data to the relevant company, which can use the data to rate drivers and offer a potential discount incentivizing safe drivers



- Speed excess with a car is less likely if the insured person knows a sensor is present in the car, and that their next insurance premium could increase in case of risky behavior

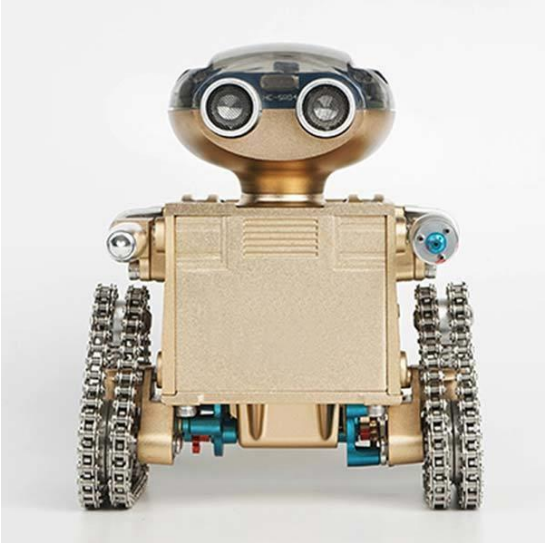
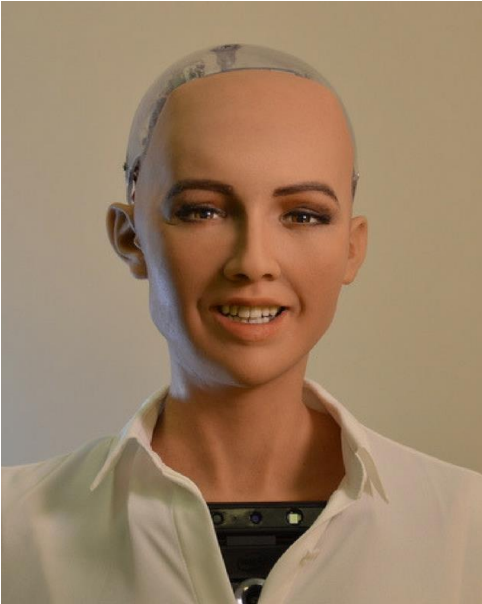
Interactive Robots



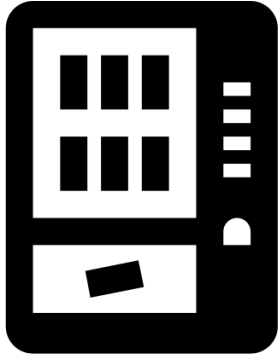
Types of Robots

Interactive

Robots that you can interact with in a physical world



Interactive Robots in Mu Sigma Office



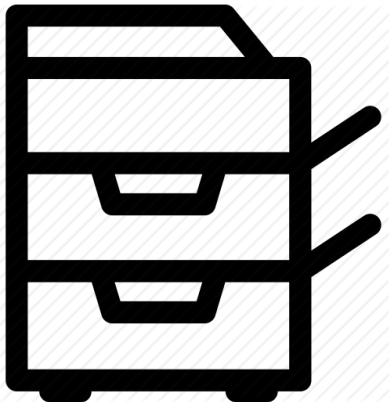
Vending Machines



Card Access control doors



Automated Lights



















Photocopiers

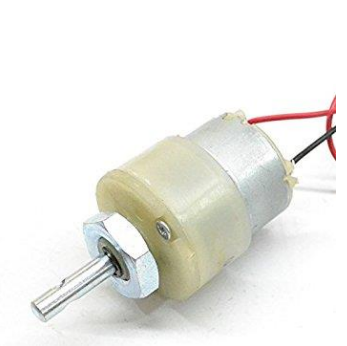


Fire alarm systems

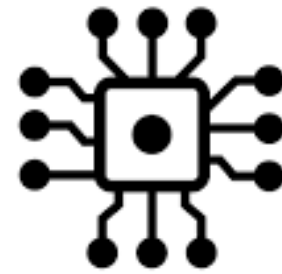
How to start with building Interactive Robots ?



<p>Ultrasonic module</p> 	<p>Human body sensor module</p> 	<p>Tilt sensor</p> 	<p>Photosensitive sensor</p> 
<p>Smoke sensor</p> 	<p>Infrared barrier sensor</p> 	<p>Vibration sensor</p> 	<p>Sound sensor</p> 
<p>1 path search sensor</p> 	<p>Flame sensor</p> 	<p>Laser Head Sensor</p> 	<p>Clock module</p> 
<p>Super regenerative module</p> 	<p>Temperature and humidity sensor</p> 	<p>Raindrop sensor</p> 	<p>Soil Sensors</p> 



Input from physical world (Perception)



Process (interpretation and planning)



Action

Is this the future of Robotics?

