

Industrial 4.0

PAST, PRESENT, FUTURE

Executive Summary

- This is the era of fast development and digital transformation. There are four times of industry revolution (IR) since year 1784.
- 4IR, the fourth industry revolution is development of Artificial Intelligence (AI), which combines all 3 elements together in the previous revolution.
- In the future, the job opportunities will have a higher demand on the computer technology

Autonomous Robots

Simulation

System Integration

Industrial Internet of things

Cybersecurity

Cloud

Additive Manufacturing

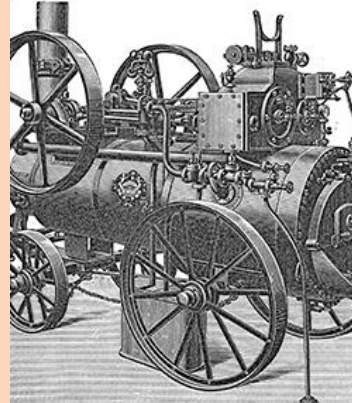
Augmented Reality

Big Data and Analytics

Introduction

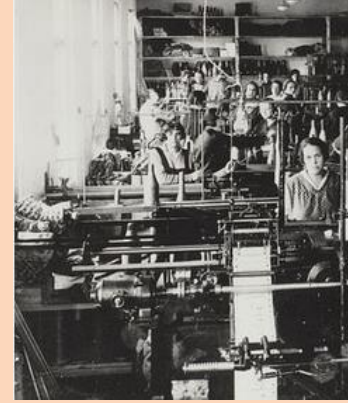
"We need to understand the past to appreciate the present, and then learn about how it will change our future."

1IR



mechanical production
(steam,water)

2IR



Mass Production
(Electricity)

3IR



Digital
(IT,Electronics)

4IR



Artificial Intelligence
(AI)

Content

Autonomous Robot

Autonomous robot, also known as autorobot, is robot that can perform tasks by themselves without explicit human control. These robots sense their environment by microphones, laser scanners, force-torque sensors and spectrometers. For examples, BMW and Toyota car have autonomous driving system.

Cloud Computing

Cloud Computing is availability of the computer system resources for data storage (cloud storage) and computing power. Cloud is usually known as data centers available over the Internet. Cloud are categorized to mobile, database, hybrid cloud, public cloud, private cloud, server and storage. The examples of cloud are Google Cloud, Google drive, iCloud and Alibaba Cloud.

Internet of Things (IoT)

Internet of things touch almost everyone's life. The perception layers, such as sensors or activators are connected to the network. The information will be transfer to the application layers like Cloud or the server. For examples, CCTV, smart light, SAMSUNG SmartThings and smart helmet. The CCTV nowadays not only function to monitor but also have sensors. This kind of Internet of Things provides benefit to the business and also operation.

Augmented Reality

Augmented reality is used in tourism, education and some other sectors. It provides more information to the users through an experience of real-world environment that the objects in the real world is generated by the computer information. For example, the game Pokemon GO is an augmented reality mobile game that the players can find the Pokemon in real world environment.

Trend of Future

Invisible analytics

Drones

Video Consumption

Virtual Reality (VR)

Smart home

Artificial Intelligence (AI)

Wearables

Mobile Payments

3D Printing

Connected cars

Reflection

Through Industrial 4.0 talk, we gain many information and knowledge about the industry revolution. This is a new era which we are adopting to the Fourth Industry Revolution. For examples, almost everyone is using cloud storage in daily life. Furthermore, the Artificial Intelligence (AI) also a technology that touched our life. AI is built in appliances such as radio, face detection and recognition which is available in the smart devices. All this technologies in the fourth industry revolution bring uncountable benefits to many sectors, as they save workforce and very convenient. This talk motivate us to learn more knowledge in order to contributes our ability towards the revolution in the future. Besides that, this talk also motivates us to support the development of technologies so that we can follow up the industry revolution and make life better.

Education 4.0

Education 4.0 is a method of education using digital technology. Nowadays we are still in Education 3.0 but adopting to Education 4.0. For example, now we are using different platform for online classes and online talk, such as Webex, Google Meet and Zoom. These platforms are considering in Third Industry Revolution.

Commerce 4.0

The new generation is in the era of e-commerce, it is also adopting to Commerce 4.0. The examples of online shopping platform are Shopee, Lazada and so on. The Commerce 4.0 also shown in the invention of electric cars and smart home. The use of Uber and Grab also which almost replace taxi also a revolution towards 4IR. Besides that the foodpanda and grab food which enable users to order food online also transform the whole e-commerce industry.

Big Data Analytics

Big data analytics is a field that provide different ways to analyze data and make decision. Large number of unstructured data are putting in together, and then they are put into big data analytics engine. It is beneficial for decision making process. Traffic light is an example of big data analytics. The traffic light can gather information by sensors. They gather information such as plate number of the vehicles, number of vehicles passed by or the number of traffic light offenders. This help the local authorities or department to perform better enforcement.