INTERNET OF THINGS

WHAT DO YOU MEAN **THINGS**?

Why is everything **SMART** nowadays? Am I the only stupid one?

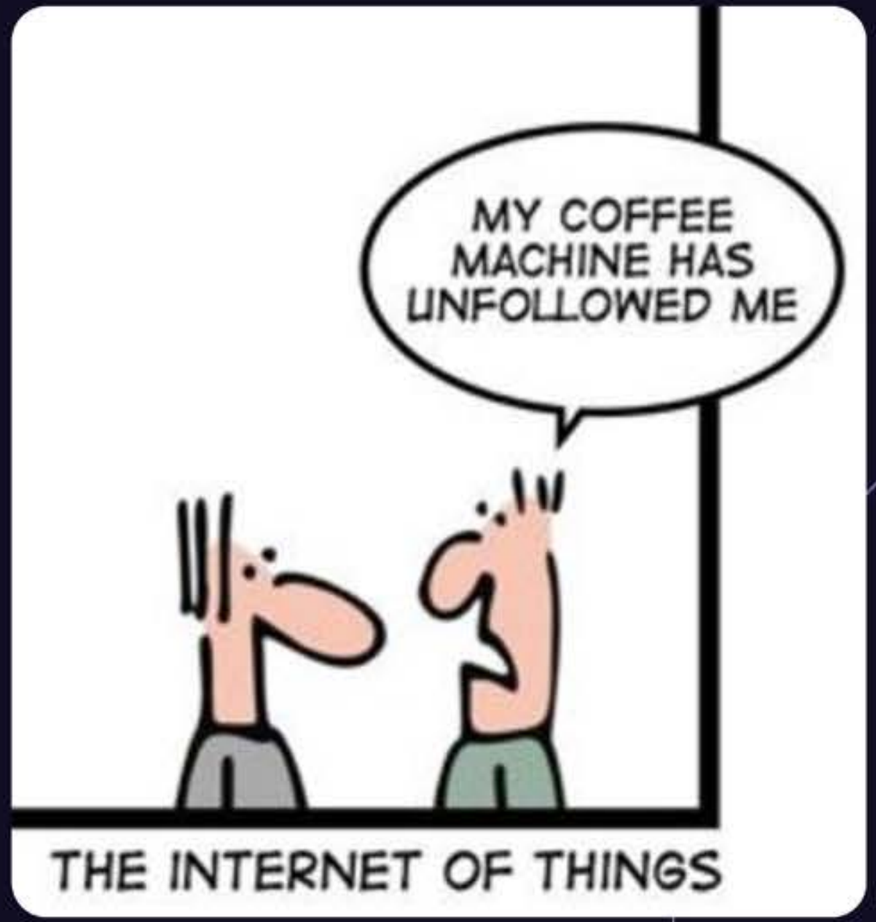
Can literally anything be connected through the **INTERNET**?

Why **IOT**???

How do I make **MY OWN** IOT network?

The **ESSENCE** of IOT

Let's oversimplify IOT to understand it!



SENSE

Data Collection

CONNECT

Data Transmission

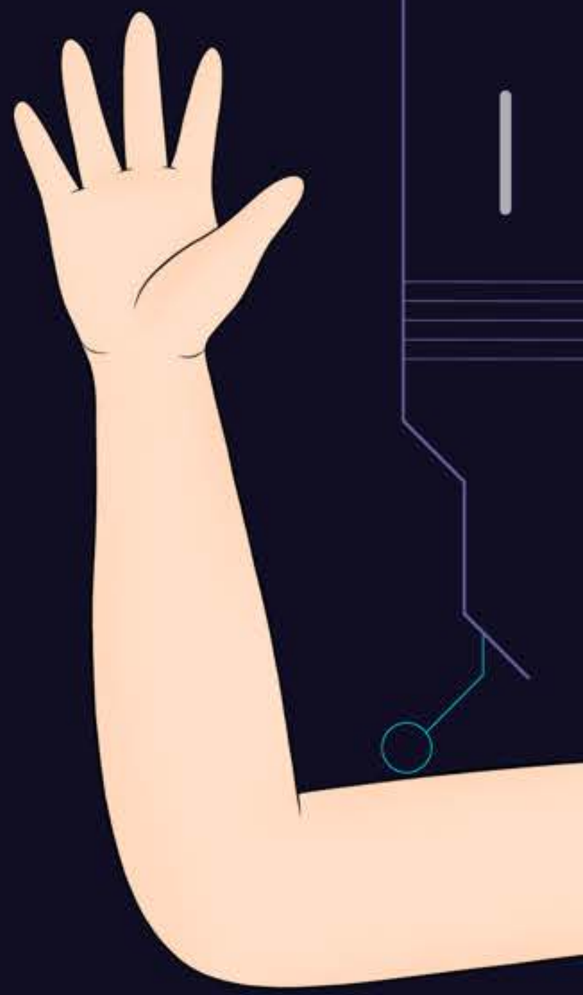
PROCESS

Data Analysis

ACT

Response

You bring your hand close to a hot cup



You bring your hand close to a hot cup

SKIN senses the temperature

Your SKIN is a SENSOR

SENSE

Data Collection

PROCESS

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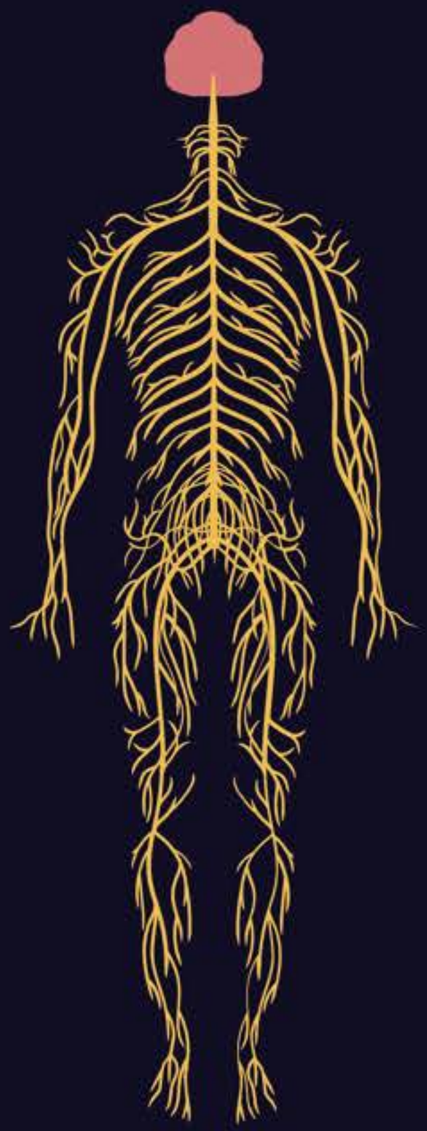
ACT

Response

CONNECT

Data Transmission



Now that the data has been collected, it needs to be **SENT** to where it can be processed

The ‘data’ is COMMUNICATED to the brain by the nervous system

SENSE

Data Collection

CONNECT

Data Transmission

PROCESS

Data Analysis

ACT

Response

In your brain, the data is **PROCESSED**

SENSE

Data Collection

CONNECT

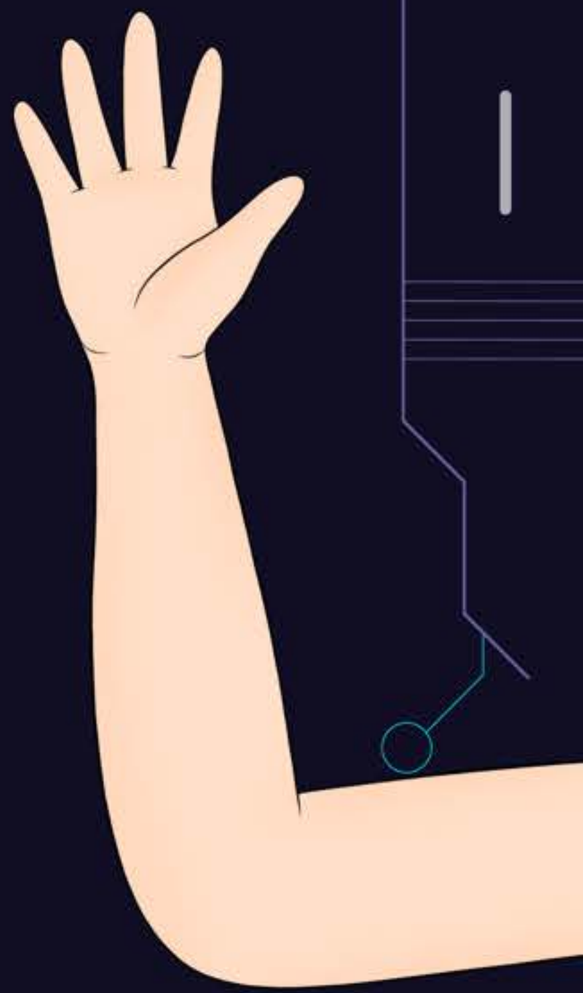
Data Transmission

PROCESS

Data Analysis

ACT

Response



The response is communicated back and the **MUSCLES** being **ACTUATORS** move the hand back

SENSE

Data Collection

PROCESS

Data Analysis

ACT

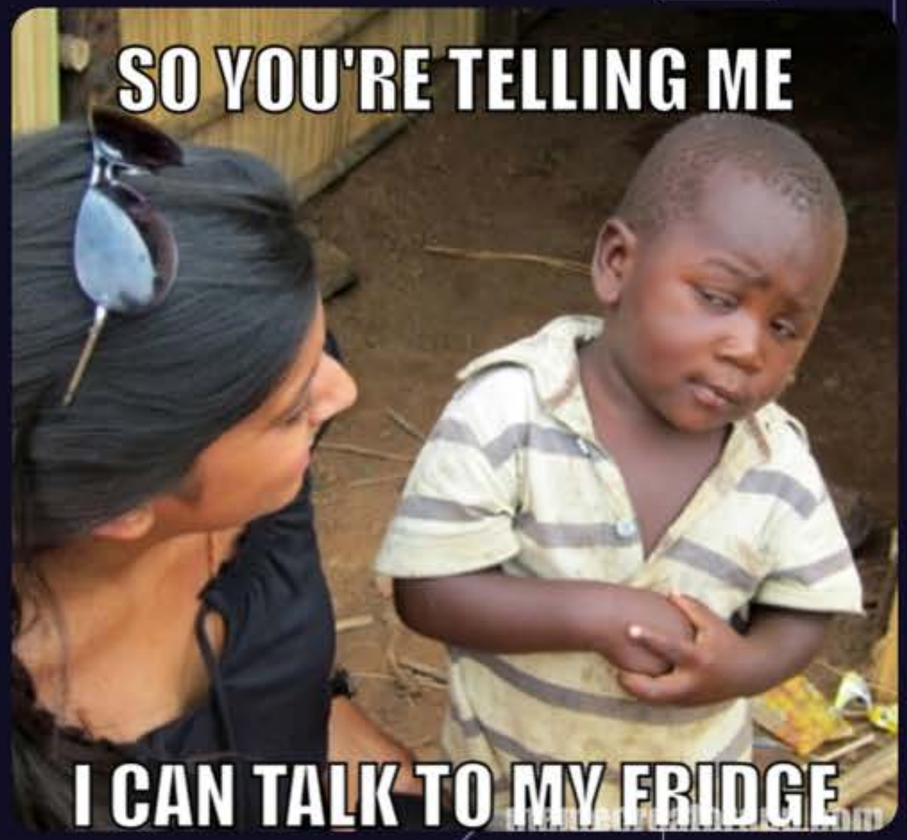
Response

CONNECT

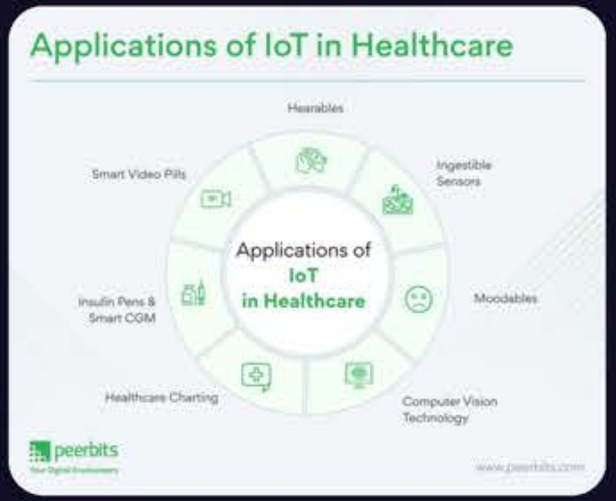
Data Transmission

IoT **Around** Us!

Think of some **whacky** and crazy applications of IoT that you would want to use



- IoT is all around us!
- From your **smartwatches** to the **E-Challan**, we are heavily surrounded by IoT networks
- There are **more than 15 billion** IoT devices in the world currently!



FOUR-LAYER ARCHITECTURE

Web applications, APIs, Business Intelligence Tools

01 APPLICATION LAYER

- Authentication / Key Agreement
- Privacy Protection

Edge computing nodes, cloud platforms

Communication Protocols, Gateways

02 SUPPORT LAYER

- Secure Cloud Computing / Computing
- Anti-Virus

03 NETWORK LAYER

- Identity Authentication
- Encryption Mechanism

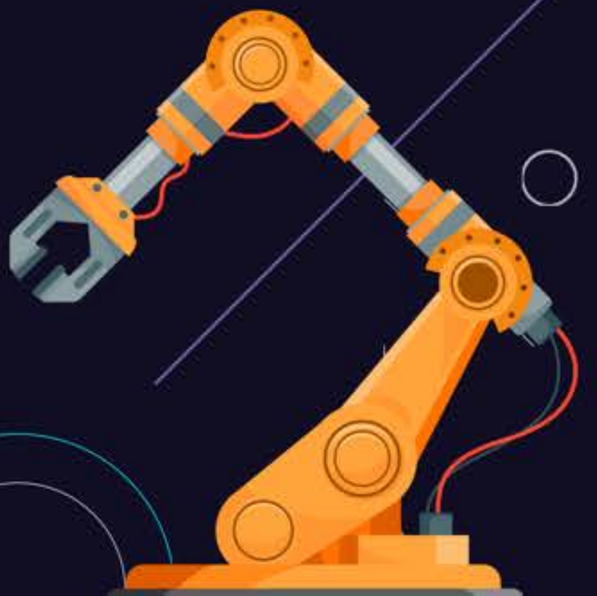
Sensors, Embedded systems, Actuators

04 PERCEPTION LAYER

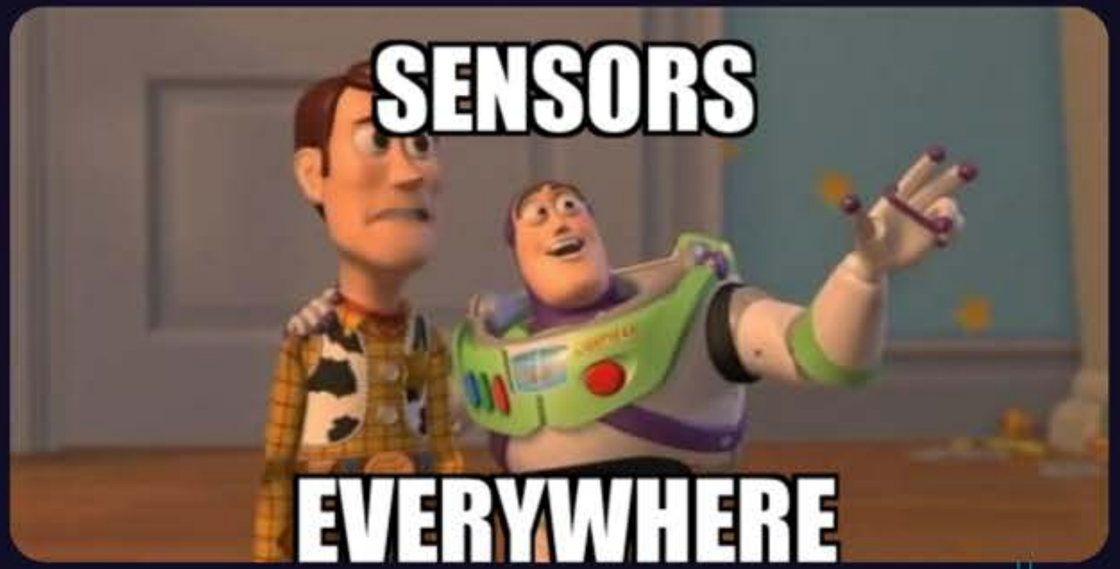
- Encryption and Key Agreement
- Sensor Data Protection

The **Perception** Layer

The **PHYSICAL** Layer of our IoT System



- It **collects data** through its sensory mechanisms and translates them into **communicable signals**.
- Finally it also performs the final action in the physical space if required through **actuators**.



The **Network** Layer

The **NERVOUS SYSTEM** of IoT

- It facilitates **data transfer** between the Perception & Application Layer.
- Focusses on data transmission, data communication, routing, addressing and security!
- Two important things to consider- **Transmission Protocols** & **Communication Protocols**.

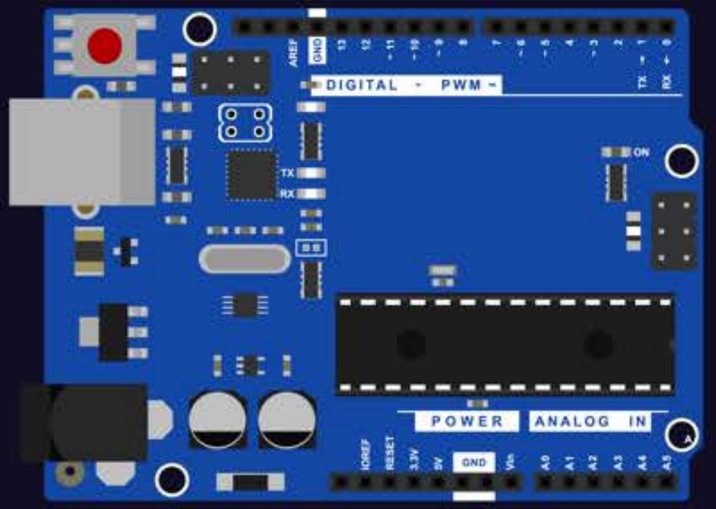
Handle the actual data transfer across networks.

Set the rules for exchange of data like HTTP, MQTT, etc.

The **SUPPORT** Layer

The HUB of **Data Processing** & Analysis

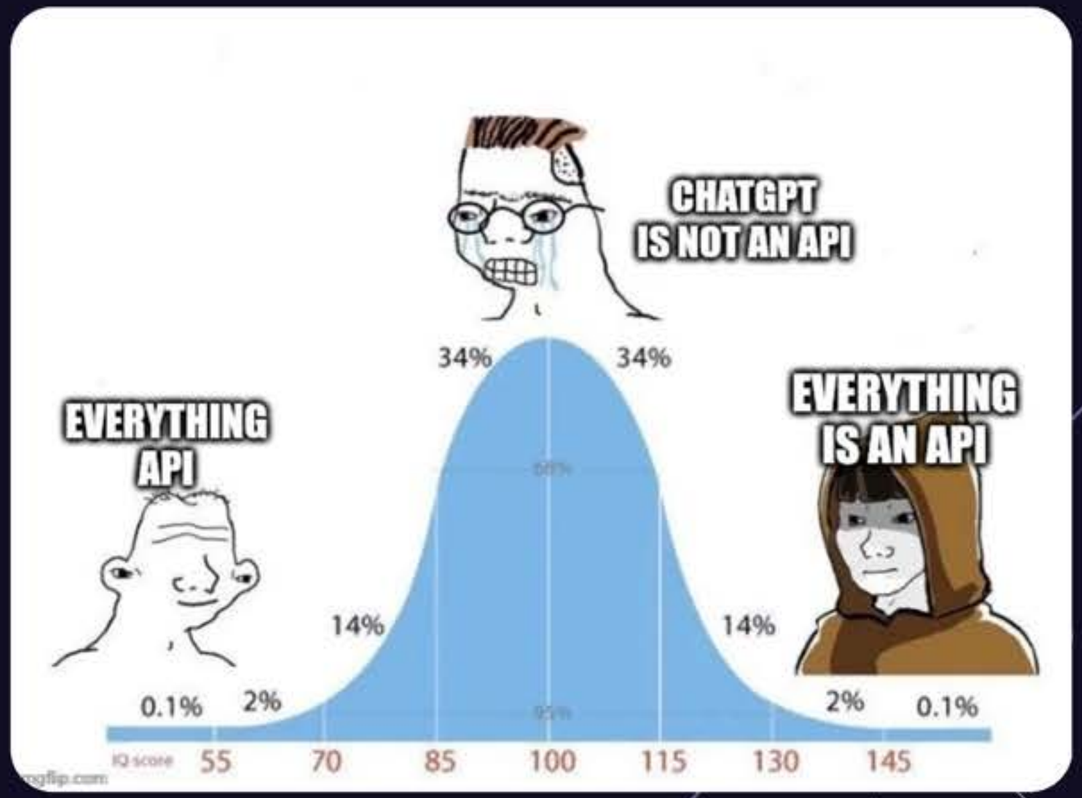
- Responsible for the management, processing and storage of data.
- The processed data can either be used to decide the action or can simply be stored for future insights.



- Consists of **Cloud** Computing and **Edge** Computing.

The **Application** Layer

The Layer of **USER INTERACTIONS**



- Interprets the data into **meaningful insights** & actions

- Enables monitoring as well a control of IoT devices

- Uses dashboards, graphs and other visualisation methods along with APIs.

- **Application Programming Interfaces** or APIs are basically messengers which take client requests to a server and return a response