



UTM
UNIVERSITI TEKNOLOGI MALAYSIA



CAIRO
UTM

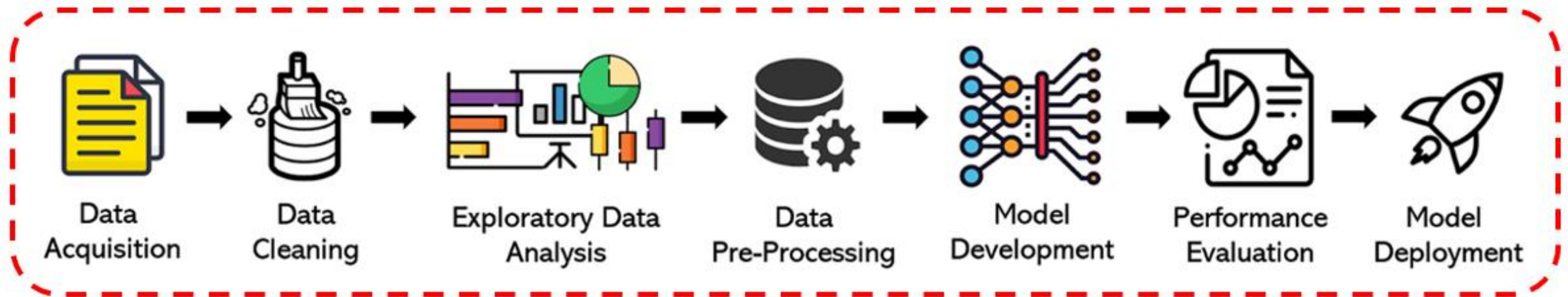
MODULE 2 : OVERVIEW OF RASPBERRY PI

PREPARED BY:

Dr. Nurulaqilla Khamis

Center for Artificial Intelligence and Robotics

Universiti Teknologi Malaysia



MODULE 2

OVERVIEW OF RASPBERRY PI

MODEL DEPLOYMENT

Where can we deploy our develop AI model in production?

AI models can be deployed in a variety of environments, depending on the application, the resources available and the need for accessibility or real-time processing. Here are some common deployment environments:



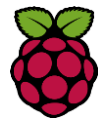
Cloud Deployment



Easy to scale, access to powerful computational resources, often integrated with other cloud services (databases, APIs)



Edge Device Deployment



Data processing happened close to the source / locally, reduced latency



Mobile Apps Deployment



Direct interaction with users, ability to use sensors and hardware of the mobile device, offline capabilities



Web Apps Deployment

Wide accessibility through browsers, easy integration with other web services

MODEL DEPLOYMENT

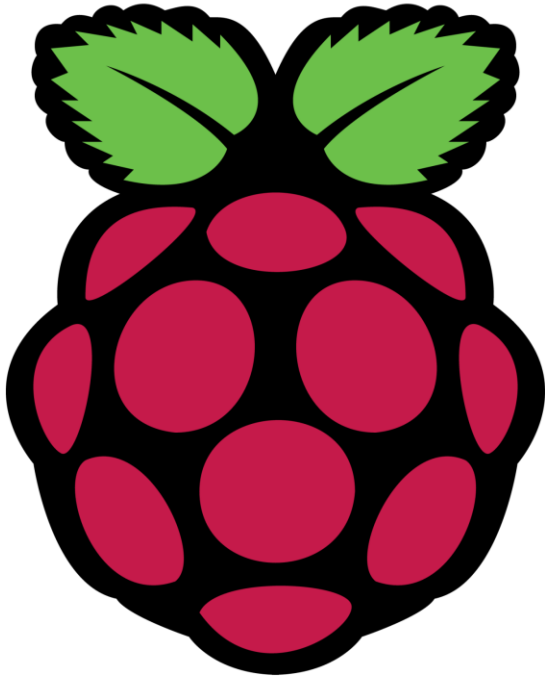
The most important file you need is the **MODEL FILE** that contains the **trained model weights** and **architecture**. This file encapsulates everything the model has learned during training and is essential for making predictions on new data.

Key files needed for running inference:

1. **Model File (Weights)** : common format include **.pt** for PyTorch, **.h5** for keras/TensorFlow, **.onnx** for ONNX models, or **.pb** for TensorFlow models. This file contains the trained parameters (weights and biases) that the model uses to make predictions.
2. **Model Configuration File** : architecture of the model, typically in formats like **.yaml**, **.cfg** or **.json**
3. **Processing Pipeline** : how the data should be pre-processed before being fed into the model

These components together allow you to effectively run inference on new, unseen data using your trained AI model.

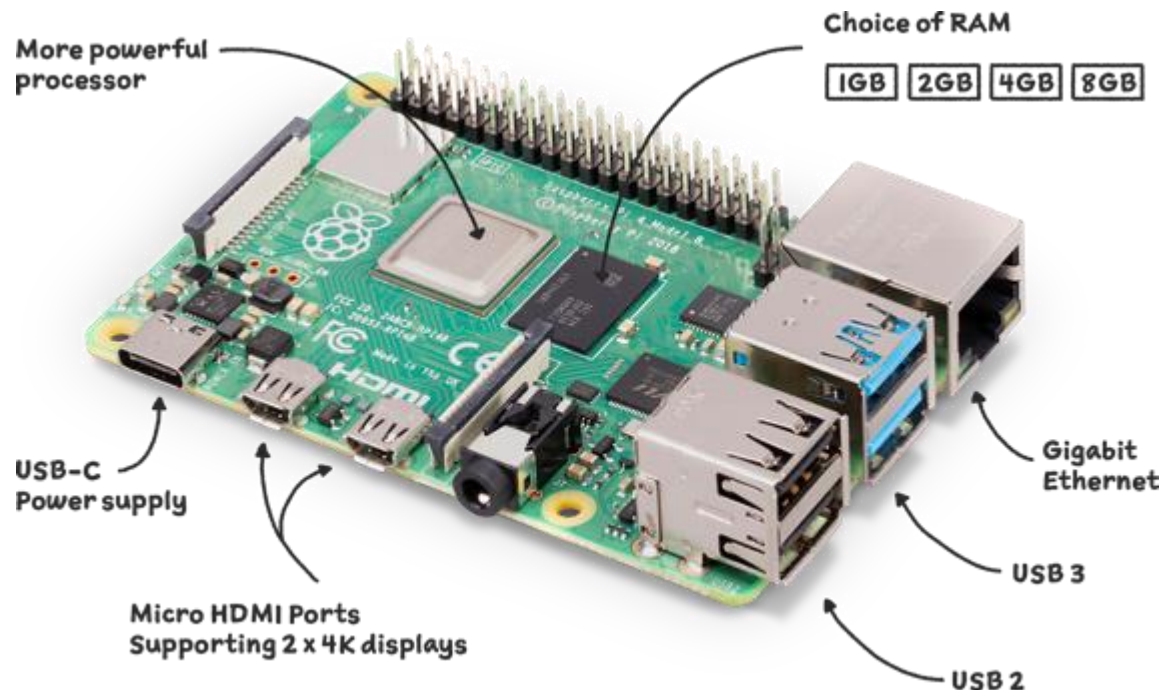
WHAT IS RASPBERRY PI?



- Tiny, affordable “mini computer” (credit card size)
- Design for learning, experimentation and innovation
- Popular in education, DIY project and even professional applications

WHAT IS RASPBERRY PI?

- Small but powerful
- Costs less than typical laptop
- Support various accessories ; sensors, cameras and display
- Easy connected with internet



- Run in Linux Based OS
- Can be connected to a keyboard, mouse and monitor
- USB Ports, HDMI output, Wi-Fi, Bluetooth

HEADLESS VS NON-HEADLESS



Headless

- Without a monitor, keyboard or mouse connected
- Controlled remotely, over a network or through command-line interface
- Remote access – SSH, VNC or web interface

Non-Headless

- Just like regular desktop computer with a GUI, easier to visualize
- Used for everyday tasks like web browsing, coding etc.

CONFIGURATION RASPBERRY PI