

به نام خدا

نام و نام خانوادگی:

عبداله رئیسی

شماره دانشجویی:

140212459011

استاد:

دکتر محمد زارع

درس:

اصول رباتیکز

| features | Arduino | Raspberry pi |
|----------------------|---|--|
| Type | Microcontroller | Single-board computer (SBC) |
| Processing Power | Limited | Relatively high |
| Operating sys | No operating system | Linux-based OS |
| Programming | C/C++ , Arduino IDE | Multiple languages, Python common |
| Real-Time Capability | Yes | Limited |
| Connectivity | [*] GPIO, UART, I2C, SPI | [*] GPIO, USB, Ethernet, HDMI, Wi-Fi |
| Use case | Embedded system, IoT, Robotics | General purpose purpose computing Media center, Server, IoT |
| Complexity | Simple | More complex |
| Cost | Generally cheaper | Generally more exp |
| Ease of use | Generally easier for beginners with a focus on simplicity and specific tasks | may have a steeper learning curve due to the more complex operating systems and diverse applications |
| Power consumption | Typically lower power consumption making it well-suited for sensor interfacing | Higher power consumption may not be as energy-efficient for certain apps |
| Graphics Processing | Limited or absent graphics processing capabilities | Capable of handling graphics-intensive tasks, suitable for multimedia apps |
| Physical size | Compact and typically smaller form factor | Slightly larger due to additional components for eg: USB ports, Ethernet, HDMI |
| Customization | Can be highly customized for specific tasks | Offers customization but with a focus on general-purpose computing |

* GPIO (General Purpose Input/Output) is a set of pins on the microcontroller that can be configured to perform a variety of functions, such as reading sensor data, controlling actuators, and interfacing with other devices.

| features | Arduino | Raspberry pi |
|-------------------|---|---|
| security | Generally considered more secure due to its simplicity and real-time nature | Requires more attention to security measures, |
| Community support | Large and active community extensive online resources and a wide range of shields and libraries | Robust community support extensive online forums and a a wealth of softwares available through package managers |
| Applications | Ideal for projects with simple control tasks, automations and basic electronics | Suitable for diverse applications including home automation, servers, <u>desktop replacement</u> and <u>educational purposes</u> |
| | | |

به طور کلی می توان گفت این دو را در مایک (type) آن ها، (OS) و (programming Languages) درگاه های ارتباطی (connectivity) و میزان سود استفاده آن ها از نظر کاربرد.