devfest 2022

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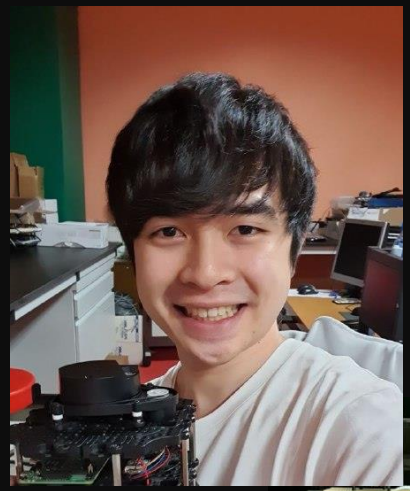
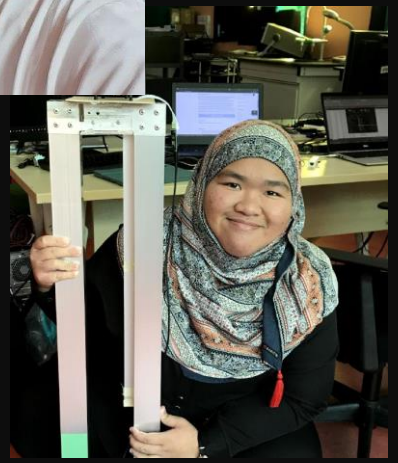
Exploring Robot Programming with Python





Hafiq Anas & Syamimi Rajak
Robolab, School of Digital Science,
Universiti Brunei Darussalam

Google Developer Groups
Brunei

Today's content:

1. What is a robot?
2. What are the robots doing?
3. Who are we?
4. What makes a robot?
5. Workshop
6. Challenge

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What is a robot?

*" A robot is an **autonomous system** (agent) which exists in the physical world, that can **sense its environment** (including its own internal state) and **act on its environment** to achieve some goals. "*

- Mataric, M. J. (2007). *The robotics primer*. MIT press.

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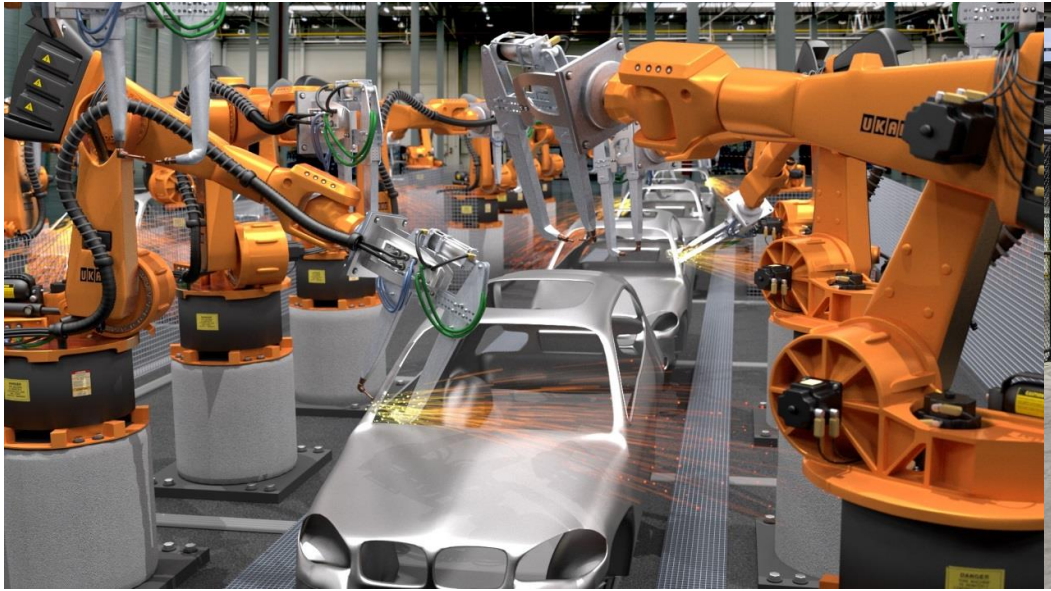
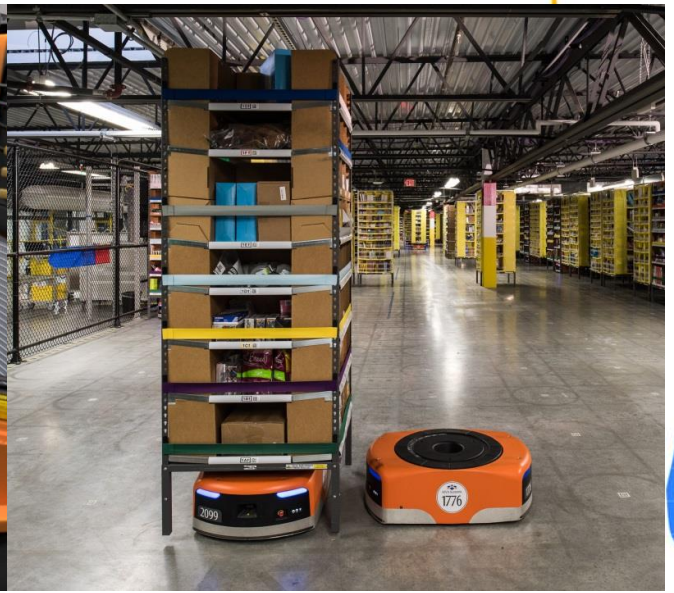
What are the robots doing?





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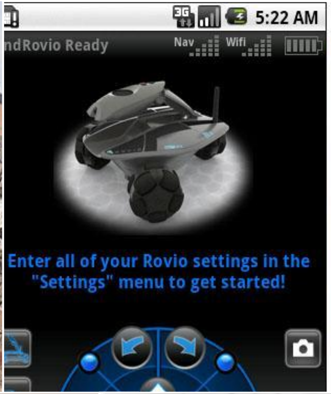

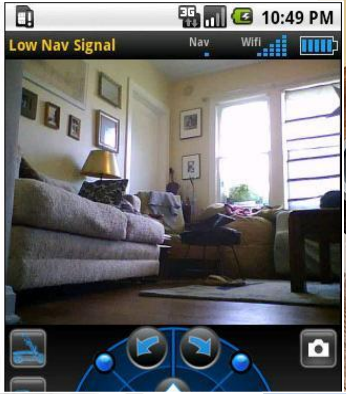

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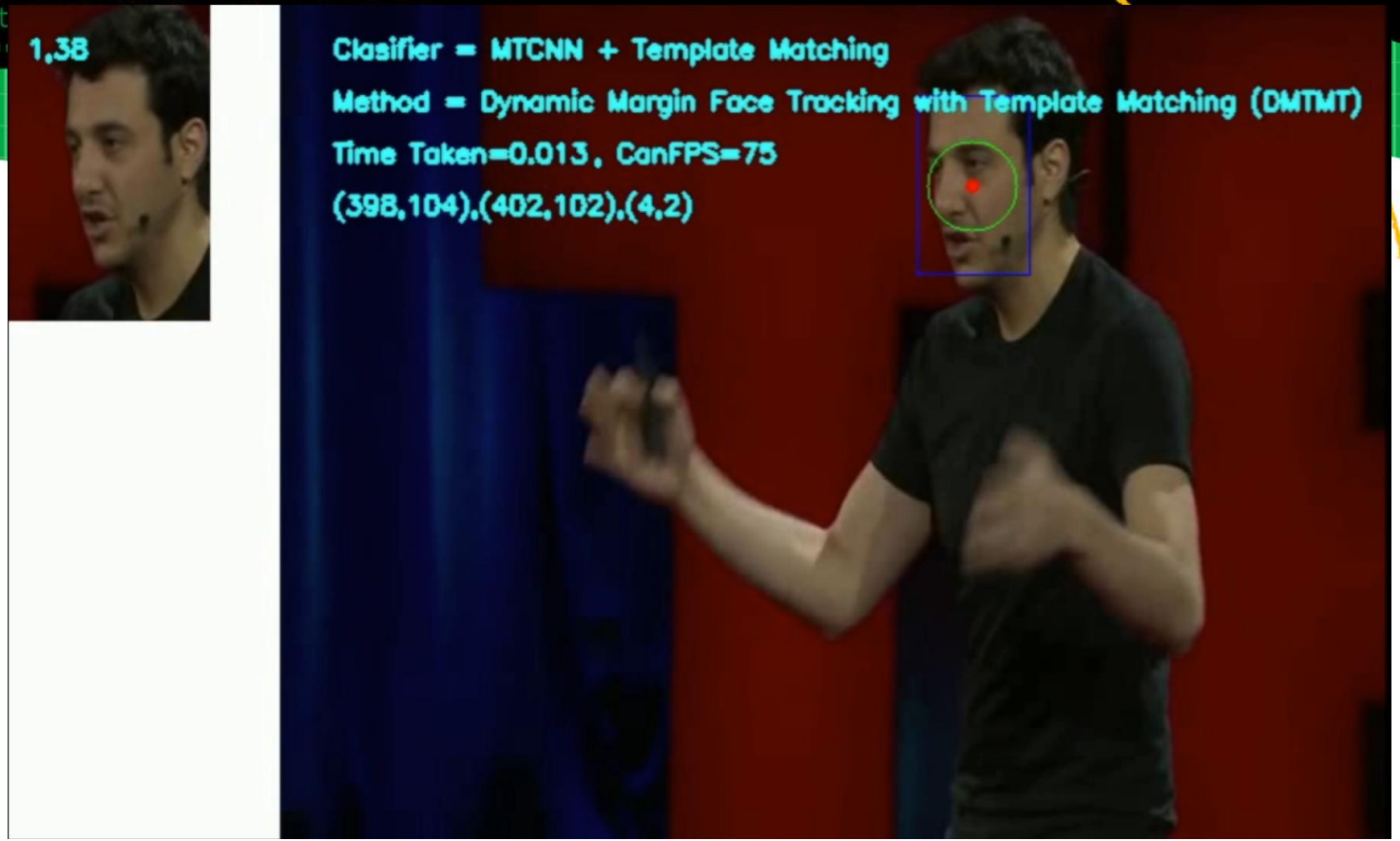
Who are we?

Robotics and Intelligent Systems Lab (Robolab),
School of Digital Science, UBD

“develop technologies that can make **artificial systems** smarter or more intelligent with the purpose **to support human everyday living**”

Intelligent systems | cyber-physical systems | robot systems

+artificial intelligence, +internet of things, +robotics

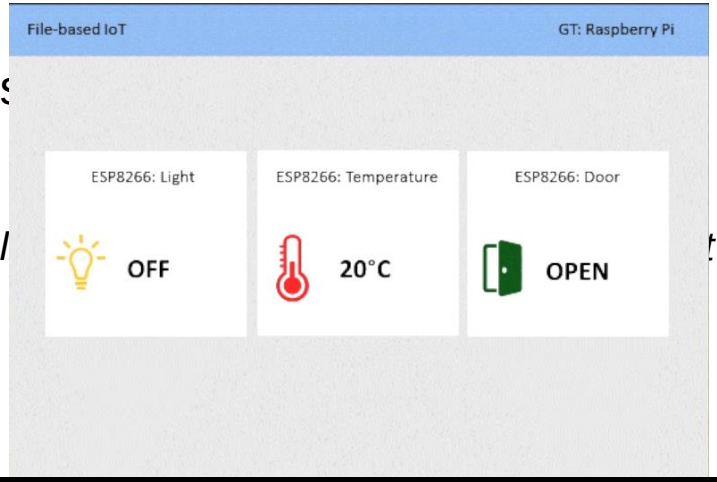


Human emotion recognition

Human emotion recognition

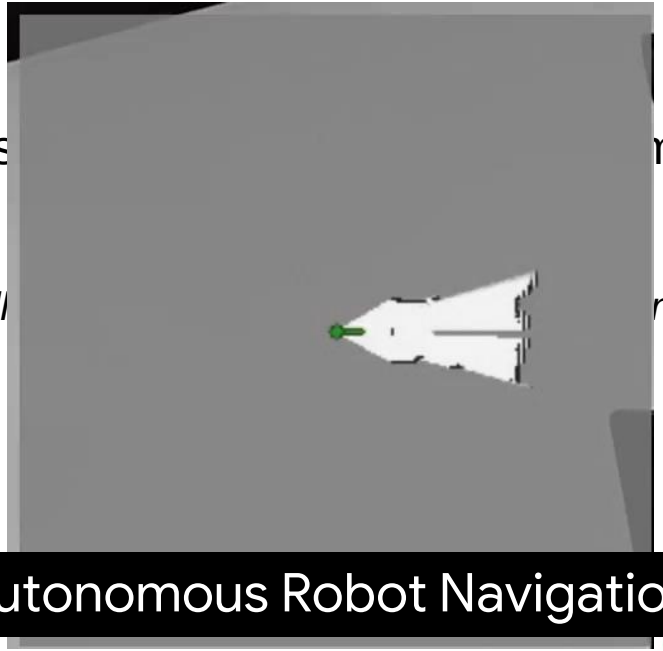
Intelligent s | robot

+artificial intel t of things,

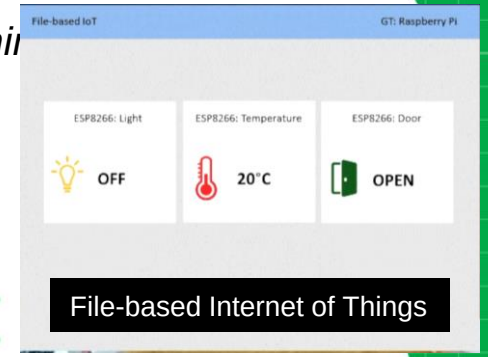


File-based Internet of Things

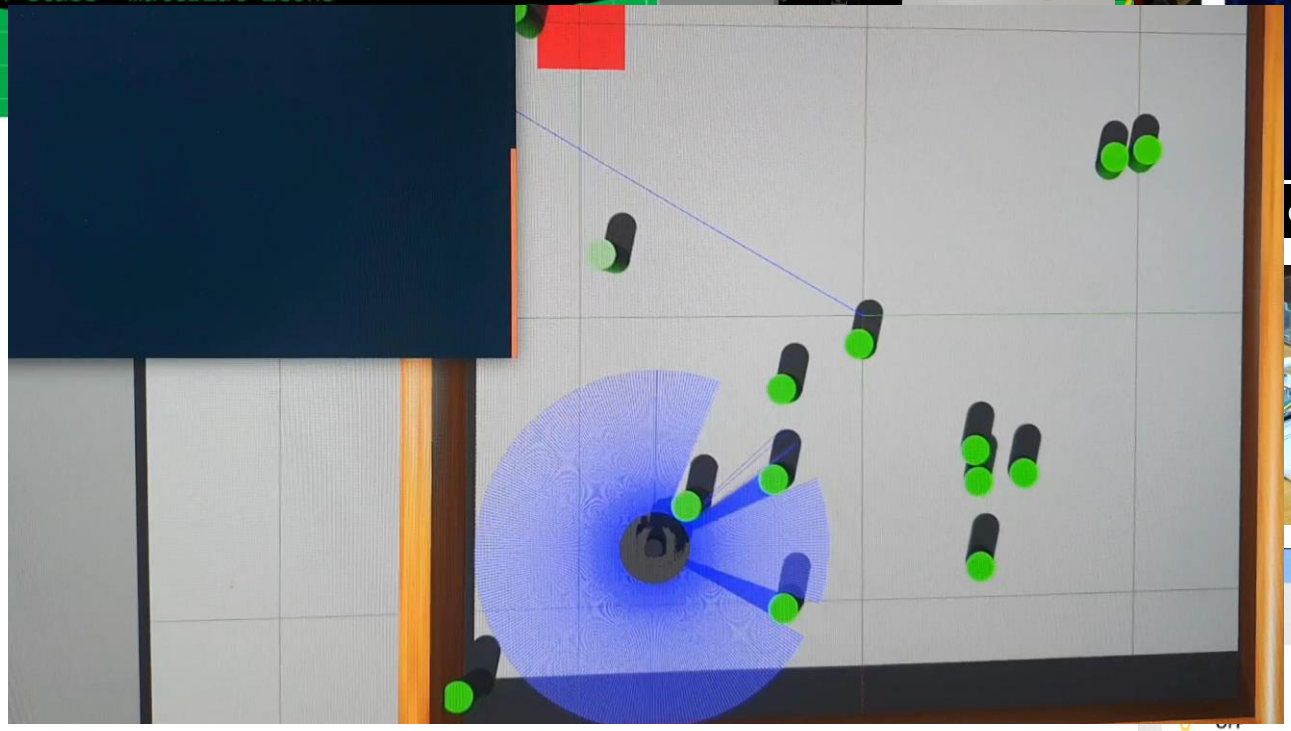
Human emotion recognition



Autonomous Robot Navigation

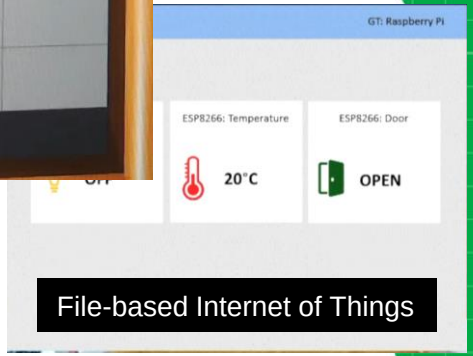


File-based Internet of Things



Deep RL Navigation in Crowd

emotion recognition

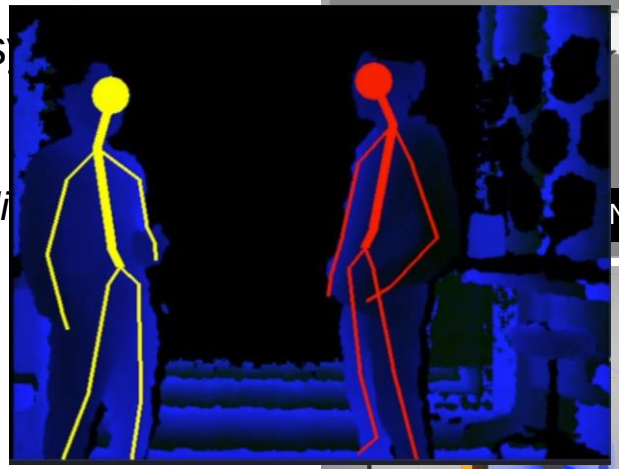


File-based Internet of Things

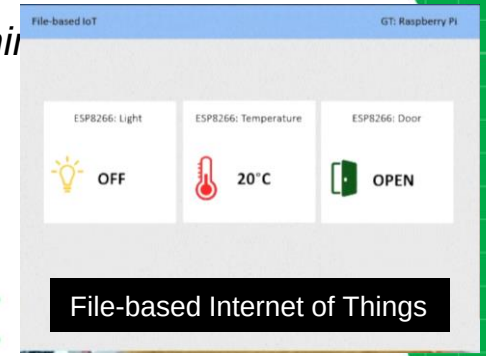
Human emotion recognition

Intelligent s

+*artificial intelli*



Navigation

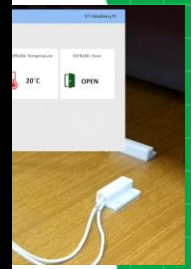


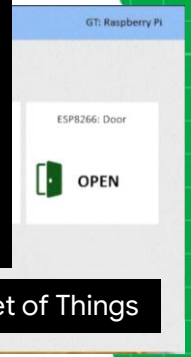
File-based Internet of Things

Crowd

Human Activities Discovery

cognition

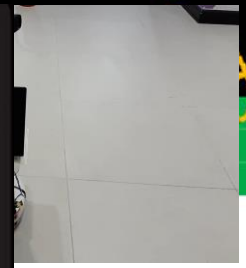




Self-Driving Car

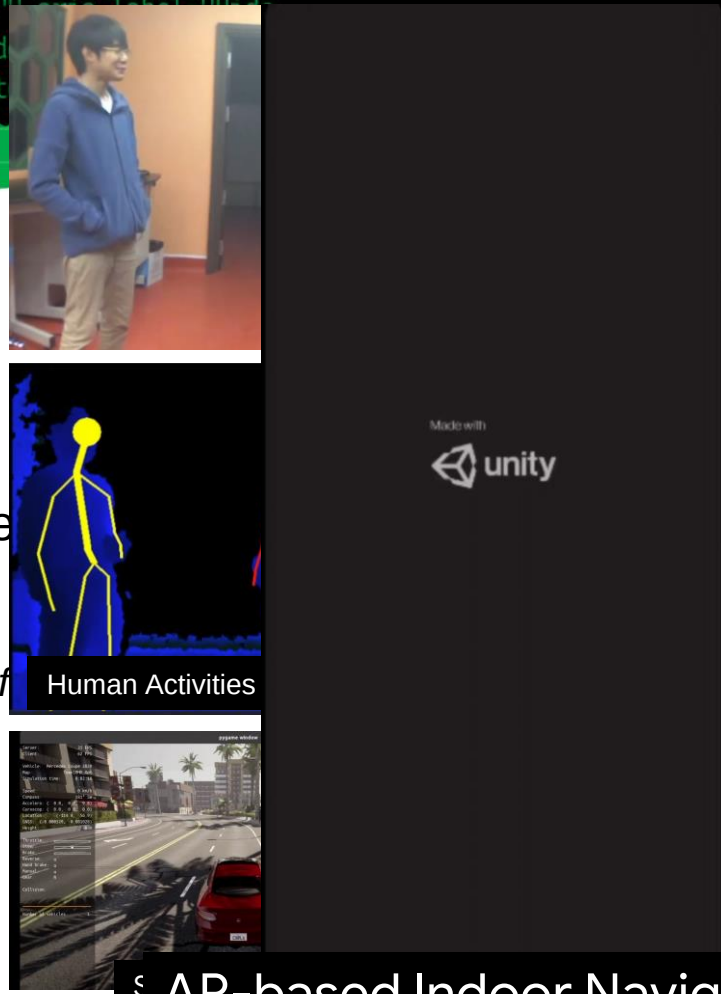
vigation in Crowd

File-based Internet of Things



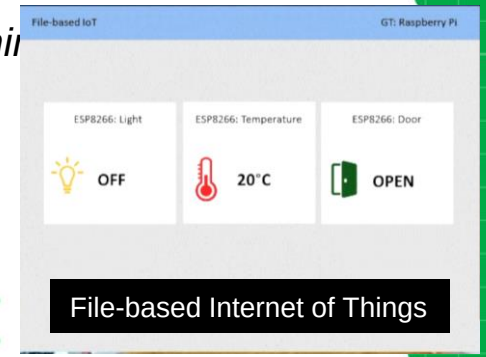
Human emotion recognition

Human Activities



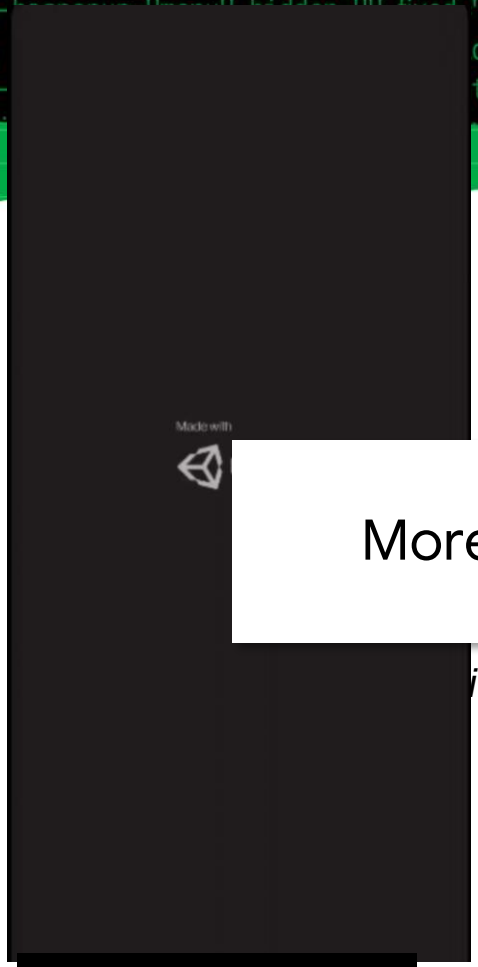
bot Navigation

owd



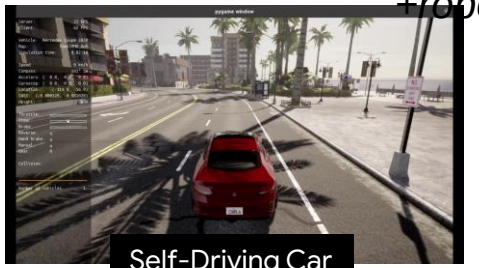
File-based Internet of Things

AR-based Indoor Navigation



AR-based Indoor Navigation

Human Activities Discovery

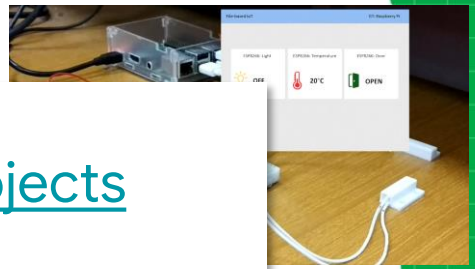


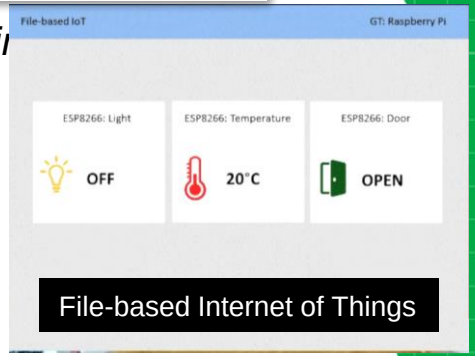
Self-Driving Car

Autonomous Robot Navigation

Deep RL Navigation in Crowd

Human emotion recognition





File-based Internet of Things

More information at https://ailab.space/projects

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What makes a robot?

Input(s)

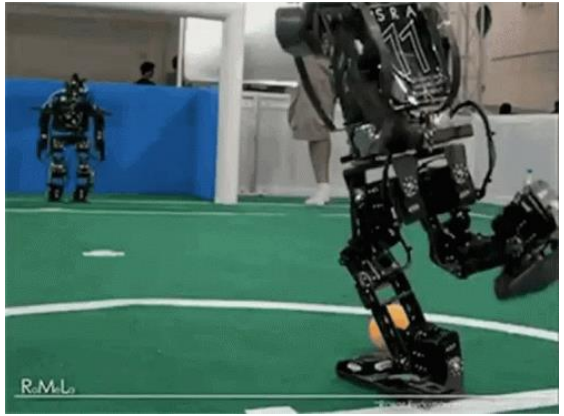
Sense
e.g “eyes”

Intelligent & Intent
e.g “brain”

Environment

e.g “ball”

Manipulate
e.g “legs”



Output(s)

“Brain” for the intelligence
“Intent” to win the game

“Eyes” to sense the ball

“Legs” to manipulate the ball

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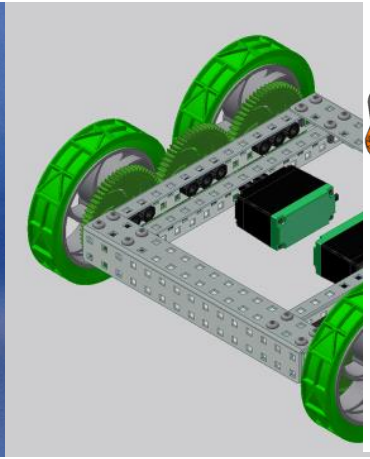
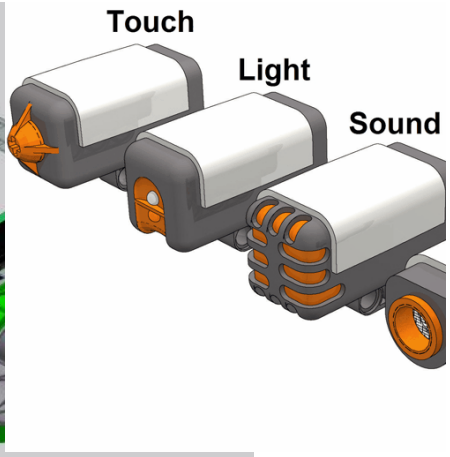
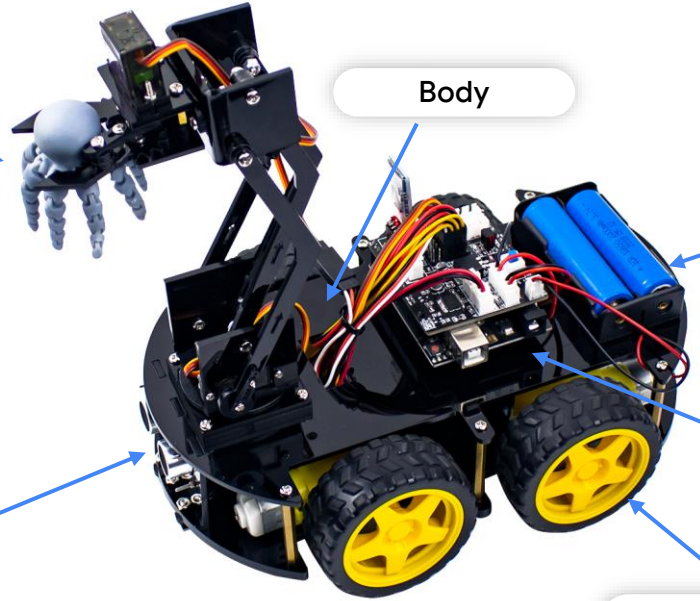
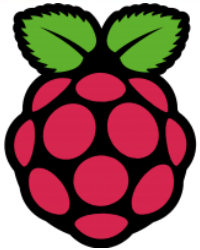





Actuators/Effectors
Body
Power Source
Controller
Sensors
Actuators/Effectors



Alphabot2 Pi

Raspberry Pi

Python

C Language

C/C++

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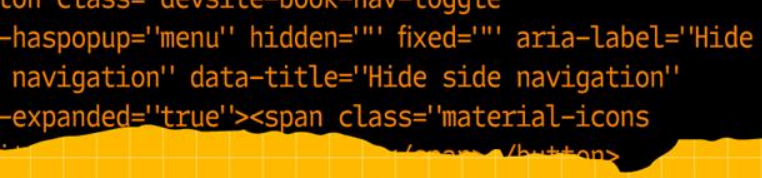
Workshop



Thank you!

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