

AI + IoT + Raspberry Pi = Magic



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KCDC 2025

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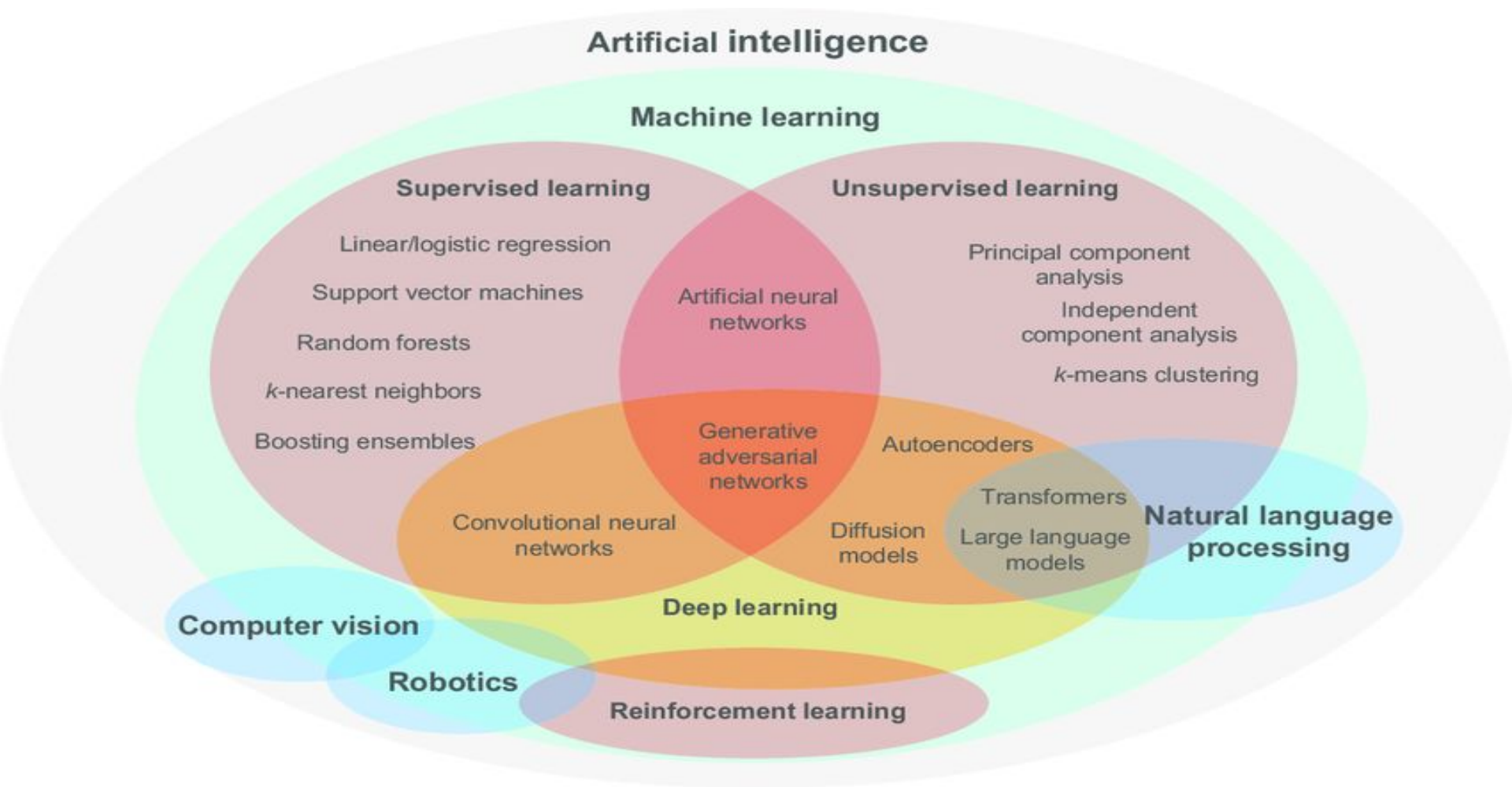
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AI:

Artificial Intelligence

- Computer Vision
- Deep Learning
- Transformers
- Natural Language Processing

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Source:

https://www.researchgate.net/figure/The-artificial-intelligence-landscape-A-Venn-diagram-providing-a-holistic-view-of-the-fig2_378676909

IoT:

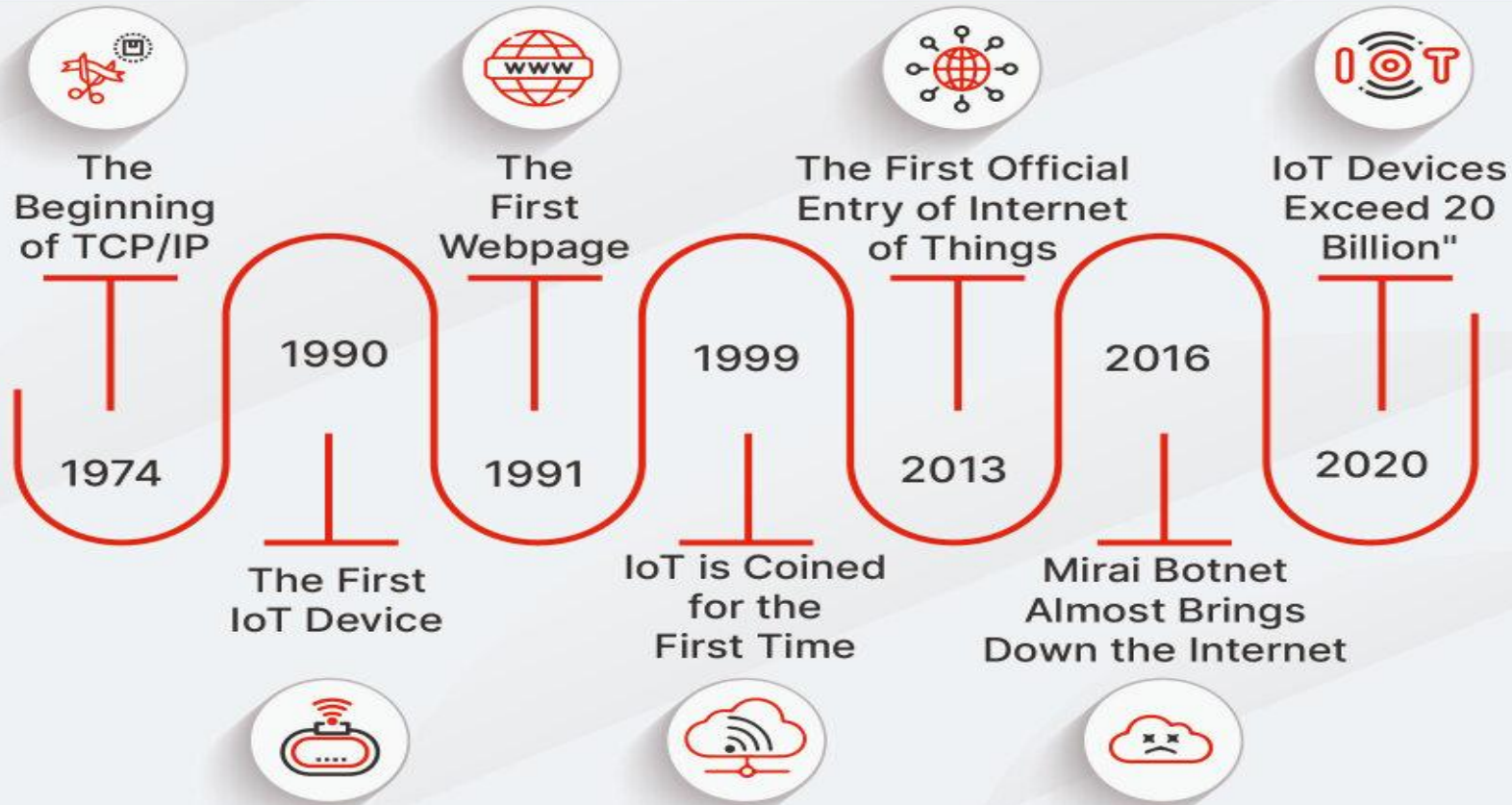
Internet of Things

What is it?

- network of physical objects/devices aka "things"
- embedded with sensors, software, and other technologies
- connect and exchange data with each other and with other systems over the internet.

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A Historic Timeline of Internet of Things





Raspberry Pi:

Single Board Computers

Raspberry Pi 5:

- 64-bit quad-core Arm Cortex-A76 CPU (2.4GHz)
- 512KB per-core L2 caches and a 2MB L3 cache.
- VideoCore VII GPU with support for OpenGL
- Dual 4Kp60 HDMI display output with HDR support
- (2/4/8/16) GB SDRAM
- 40-pin GPIO
- dual-band 802.11ac Wi-Fi
- Bluetooth 5.0
- Gigabit Ethernet port with PoE+ support
- Dual Camera CSI ports
- PCIe 2.0 interface

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Raspberry Pi 5 (2023)



Raspberry Pi 4 (2019)
Model B



Raspberry Pi 3 (2018)
Model A+



Raspberry Pi 3 (2018)
Model B+



Raspberry Pi 2 (2015)
Model B



Raspberry Pi (2015)
Zero



Raspberry Pi 3 (2016)
Model B



Raspberry Pi (2017)
Zero W



Raspberry Pi 1 (2014)
Model B+



Raspberry Pi 1 (2012)
Model B



Software

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- Raspberry Pi OS (variant of Debian)
- Languages: Python / Ruby / C
- `rpicas-hello`: interact with Camera Module 3
- `tesseract` OCR
- `Ollama`: AI Language Model Builder/Runner
- `Zed.dev`: AI coding tool
- `hailortcli`: to interact with Hailo-8L NPU AI accelerator

Magic:

“One Ring to rule them all,
One Ring to find them,
One Ring to bring them all
and in the darkness
bind them”

Middle-Earth:

GrowthNet:

<https://growthnet.biz>

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Projects

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Precision Agriculture:

<https://www.mdpi.com/2077-0472/15/3/227>

Raspberry Pi in Space:

<https://www.raspberrypi.com/for-industry/space/>

Thanks!

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Feedback, please!

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