

TrustedIoT

VUB Use Cases

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USE CASES

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Environmental monitoring

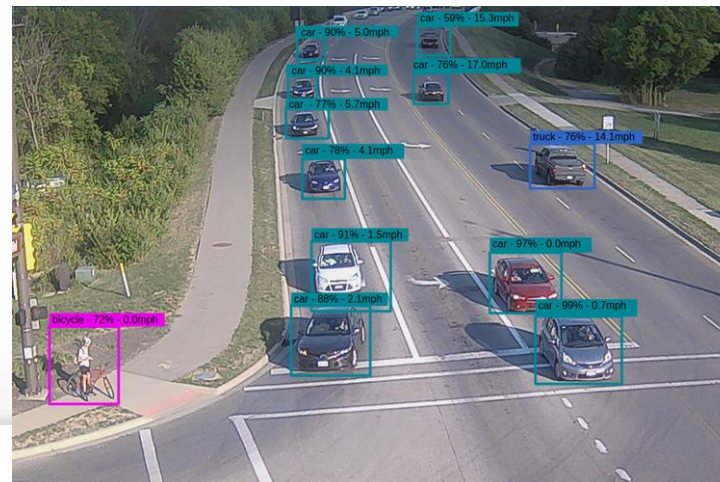
1. Single sensors

- Humidity
- Temperature
- Air quality
- ...



2. Arrays of sensors

- Audio
- Video
- ...

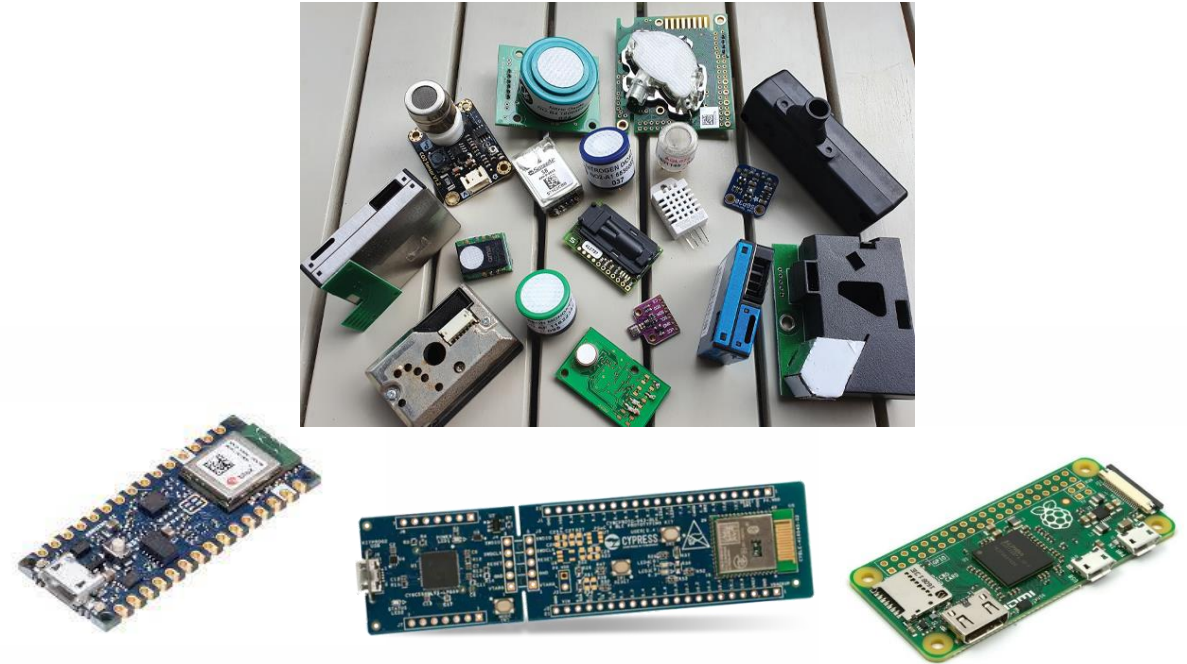


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Single sensors

- Use of low-end devices (e.g. IoT devices)
- Limited resources (processing, memory,...)
- Limited security (if any)
- But still... security is needed!



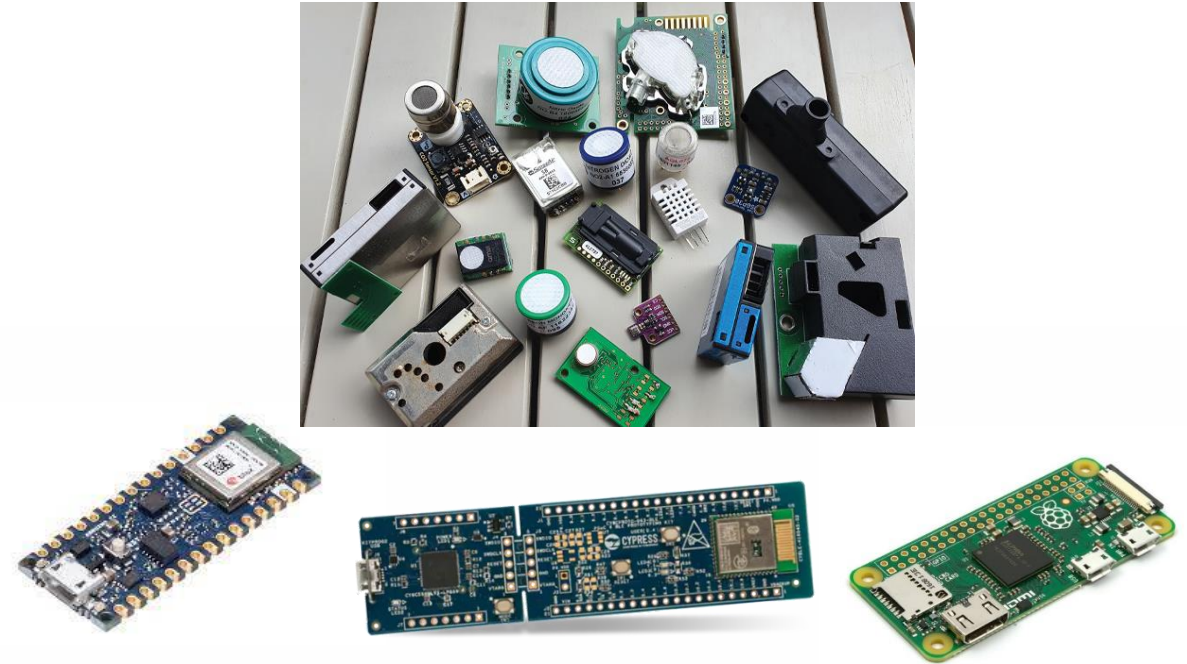
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Single sensors

- Minimal Hardware-based isolation if possible
- Basic Root-of-Trust (for some applications)
- Secure boot
- Secure bootloaders

- Approaches:
 - Evaluate novel embedded security (TPMs) and heterogeneous architectures (e.g. low power multi-cores)
 - Consider the use of AI (e.g. abnormal data communication)
 - Target specific situations (e.g. geolocalization of the device)



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Arrays of sensors

- Mid-and high-end embedded devices
- Heterogeneous architectures
 - Multi-core
 - System-on-Chip
 - TPUs
 - ...
- Additional security needs:
 - Local data processing
 - Embedded security



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Arrays of sensors

- Hardware-based isolation
 - Local data storage, GDPR,...
- Root-of-Trust
 - Device authentication, remote access
- Secure boot and secure bootloaders
 - Updates, maintenance,...

- Approaches:

- Evaluate novel embedded security and heterogeneous architectures(e.g. exploit SoC, TPUs)
- Use ARM TrustZone (e.g. for SoC FPGA) and TPMs



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Next Steps

- Explore, evaluate and compare existing security solutions from vendors
- Select suitable platforms for the use cases
- Set experimental tests (e.g. security benchmarks)

Questions? ? ?

