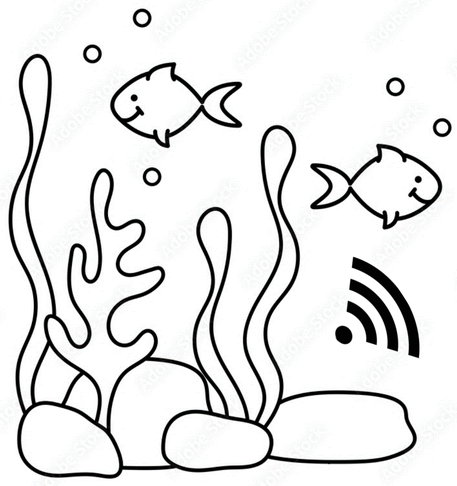
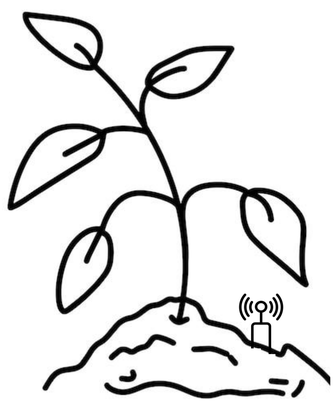
1. Ocean IoT



- Communication with acoustic waves.
- Establish a testbed in a lab environment
- Examine how flora and fauna can obstruct communication.

Recommended skillset: C programming; Embedded Systems; Singal Processing; Basic Computer Networking Principles

2. Soil Powered Computing



- Investigate different designs of Soil Microbial Fuel Cells
- Evaluation on a "static" lab environment with an IoT application

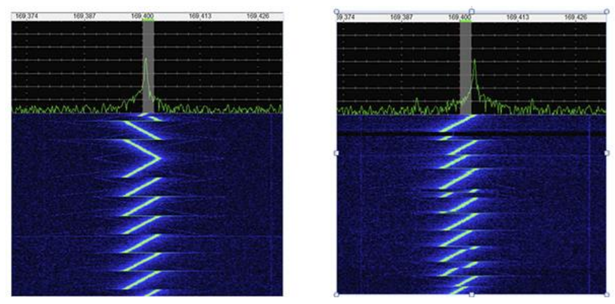
Recommended skillset: C programming; Embedded Systems; Electronics; 3D printing

3. Zephyr OS integration to IoT

- Explore how Zephyr OS can support advanced network applications in IoT
- Benchmark and quantify the performance

Recommended skillset: C programming; Computer Networks principles; Operating Systems

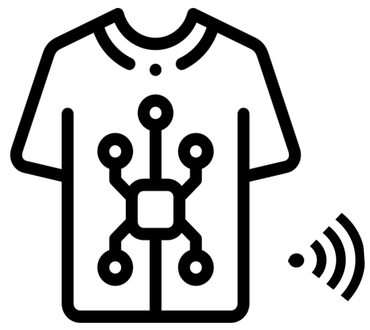
4. Cross technology CSMA scheduling for LoRa - IEEE 802.15.4g



- LoRa and IEEE 802.15.4g Wi-SUN networks.
- Enable communication by utilizing energy emissions.
- Collision avoidance based on the cross technology communication.

Recommended skillset: C programming; Embedded Systems; Basic Computer Networking Principles; Digital Communication

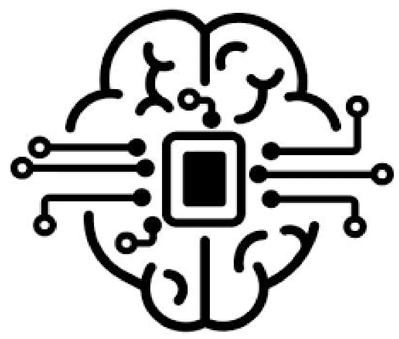
5. Smart clothes for Health



- Utilize smart fabric to capture biomarkers
- Enable activity monitoring/identification with AI to support smart health applications

Recommended skillset: Electronics; C programming; Embedded Systems

6. Intermittent Learning



- Explore intermittent computing techniques for embedded AI
- Investigate basic principles impact on MSP430 MCU

Recommended skillset: Embedded Systems; C programming; AI/Data Science

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