



Nordic University Hub on Industrial IoT

Student Meeting 2023

August 29 - August 31, Aalto University in Espoo, Finland



Meeting proposal

Annual meet and greet: Non-academic programme for meet and greet amongst the members of the hub and an update on the current research topics being pursued by different groups/individuals within the hub

Funding amount: Unknown (Estimated amount: xxxx EUR)?

Dates: August 29 - August 31, 2023

Duration: Three days

Location: Aalto University (Finland)

No. of participants: ~20

Description: Post-docs, PhD students within the hub

Possibly: master's thesis students, research assistants etc (if budget allows)

Events and activities

Possible events:

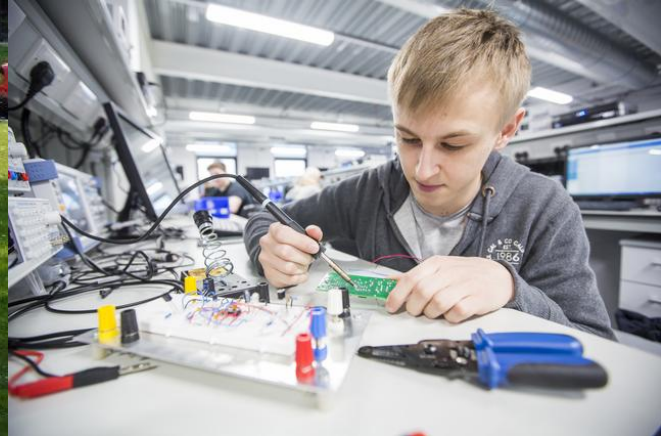
Team building events and activities

1. City tour/ exploration event
2. Outdoor games
3. Barbeque/ evening party

Possible events:

Competitions/workshops

1. IoT product development workshop
2. 3- minute pitch competition
3. Industrial visit to an IoT company



Tentative Programme

Day 1:

10:00 - 12:00	Arrival
12:30 - 14:00	Lunch
15:00 - 17:00	Group activity (Team building) (small)
17:00 - 18:00	Coaching on pitching
18:00 - 19:00	Keynote address / Hub updates
19:00 -	Dinner

Day 2:

07:00 - 08:30	Breakfast
09:00 - 12:00	Group activity (eg city tour)
12:00 - 13:00	Lunch
13:00 - 15:30	Workshop
16:00 - 18:30	3 minute thesis Competition
19:00 -	Dinner

Day 3:

07:00 - 08:30	Breakfast
09:00 - 12:00	Industrial visit
12:00 - 14:00	Lunch
14:00 -	Departure / Free for self exploration





Competition: 3- minute thesis

Short (1 hr) coaching session for students, assistants and PhDs in presenting their work in a fruitful manner by a professional (to be decided who)

Three minute thesis competition where PhD students, Master's students and Research Assistants will present their work in a quick but a well delivered manner to a panel of professors and possibly entrepreneurs. Awards to be given to winner either as a whole or of different categories.

Post Docs (if present) present their recent publication
PhDs present their doctoral thesis (or what they aim to achieve)
Master's students present their thesis (or a recent project)
Research Assistants present their project

Workshop: IoT product development with energy harvesting

Short lecture on recent advancements in micro-energy harvesting for powering IoT devices and wearable devices by Prof. Yu's group (Aalto University) (Tentative, have to discuss this with her)

Workshop on DIY IoT device prototyping (Take-home kits)

- Mini solar panels powered Arduino device
- Temperature sensors
- ePaper screen

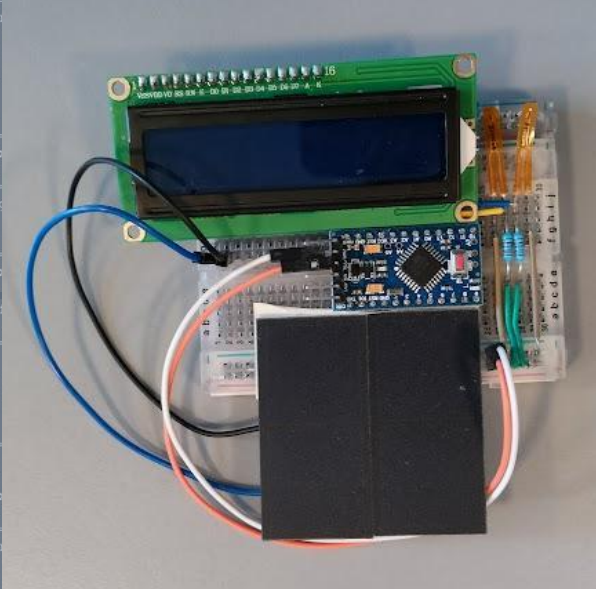
The kits will comprise all the wires, cables and all the devices needed to build the prototype.

```
if (wOffset == rOffset) { // Is an RGB-type strip, 3 bytes/pixel
for (uint32_t i = 0; i < numBytes; i += 3) {
    p = &pixels[i]; // -> NeoPixel lib buffer (8-bit)

    // Blend values between p1 & p2 buffers (if blending is disabled,
    // p1 & p2 both point to the same data, so we don't need separate
    // code for blended vs not).

    c = *p1++ * weight1 + *p2++ * weight2; // 32-bit result
    // Determine base index into gamma table (high byte of 32-bit
    // result), and weighting of next gamma entry.
    idx = c >> 24; // High byte = base gamma table index
    w2 = c >> 16; // Mid-byte = next-entry weight
    c = g16[1][idx] * (256 - w2) + g16[1][idx + 1] * w2;
    p1[0] = (c >> 8) & 0xFF;
    //
    //
    //
    //
    // Same operation, green channel
    c = *p1++ * weight1 + *p2++ * weight2;
    idx = c >> 24;
    w2 = c >> 16;
    c = g16[1][idx] * (256 - w2) + g16[1][idx + 1] * w2;
    p[gOffset] = (c >> 16) + ((c & dither_mask) > d);

    // Same operation, blue channel
    c = *p1++ * weight1 + *p2++ * weight2;
    idx = c >> 24;
    w2 = c >> 16;
```



Industrial visit: Mailefer Industries

Industrial excursion to Mailefer Industries to learn and see in operation smart manufacturing techniques and industrial IoT in practice. Mailefer are industrial leaders in extrusion technologies relating to pipes, wires and cables with product and process optimization.

