Group 21

Eelis Turjanmaa

Lauri Gröndahl

Mikael Mäkelä

Tuomo Viitanen

Plant watering system

Description and parts used

- Automated plant watering system

- System completely integrated in 3D printed bird-like body (PLA)

- Detects dry soil with a soil moisture sensor (bird's feet)

- Starts a 3 v submersible pump installed within a household plastic tank --> water let out via tube in bird's tail

- Stops pump when wet soil is detected

- Refillable from detachable top (head)

- Two halves: disassembly for battery replacement etc. possible

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Plant watering system
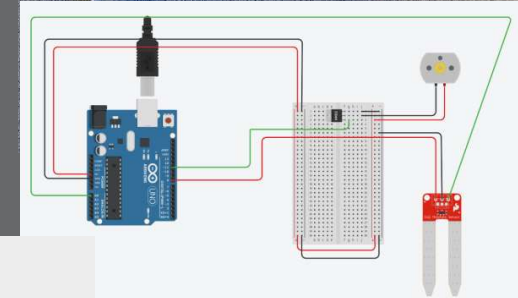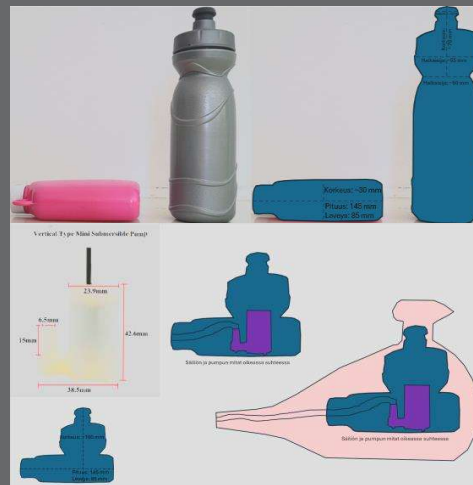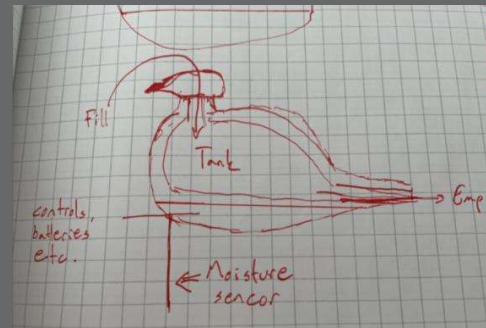
Sustainability

+ 3D body has significant infill

+ Water tank was constructed from recycled household items

+ Every part is replaceable

- Choice of water tank resulted in a large print

Processes

- At least one weekly meeting + Discord

- TinkerCad simulation

- Cardboard/plastic prototyping

- Modeling with Fusion 360

- 3D printing
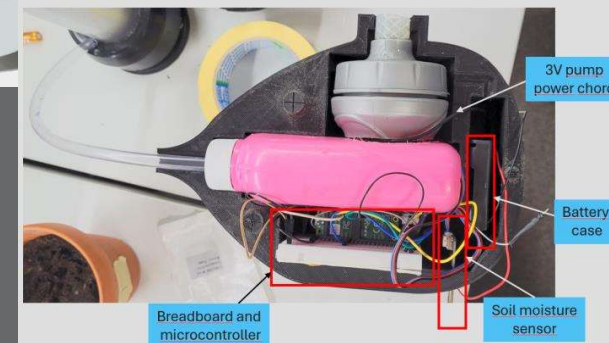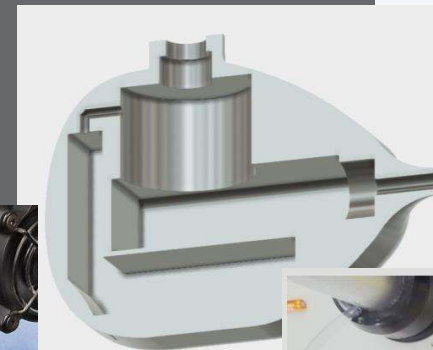
Plant watering system

Challenges

- *Choice of water tank --> suboptimal solution*

- *electrical component malfunction --> solved*

- *3D printing error --> solved*

- *turning system on/off --> solved*

- *low-quality water pump --> not solved*

Layer missing from right half of the bird after partially failed print
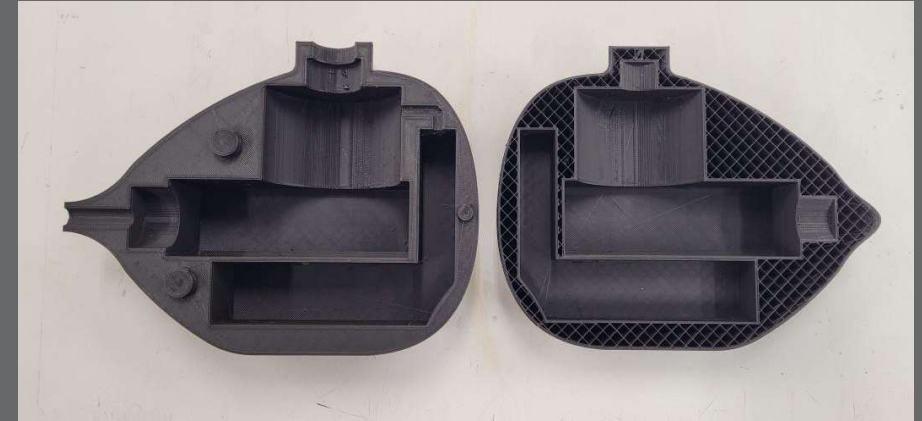
Reflection

<u>We learned:</u> 3D modelling and printing, embedded programming and related electronics, project management and teamwork skills

<u>What worked well:</u> teamwork, problem solving, technical skills
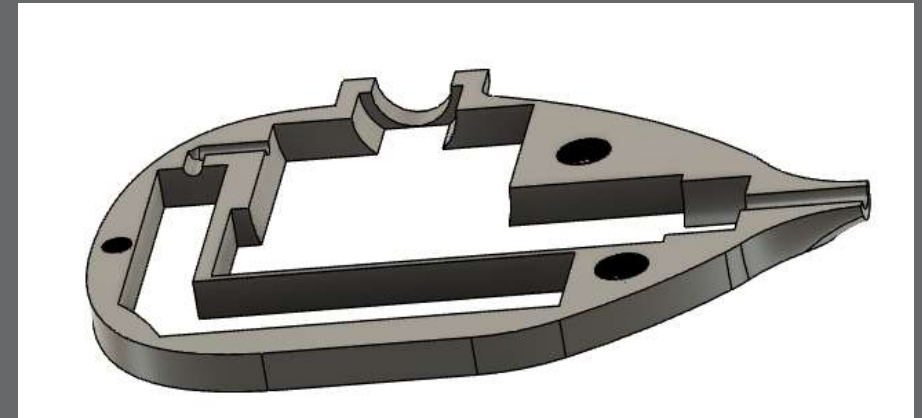
<u>What didn't work well:</u> taking enough time to explore alternative solutions and prototype them

<u>What we're proud of:</u> overcoming obstacles on time as a team, polished 3D model with a good digital logic

Missing layer sliced from model and printed separately

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Plant watering system

DEMO