Self-directed Learning in STEM Education

SCIENCE ON STAGE 2026
KLAIPĖDA·LITHUANIA
THE EUROPEAN NETWORK FOR SCIENCE TEACHERS

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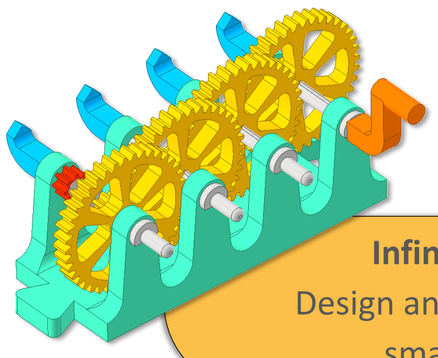
Develop your own robot

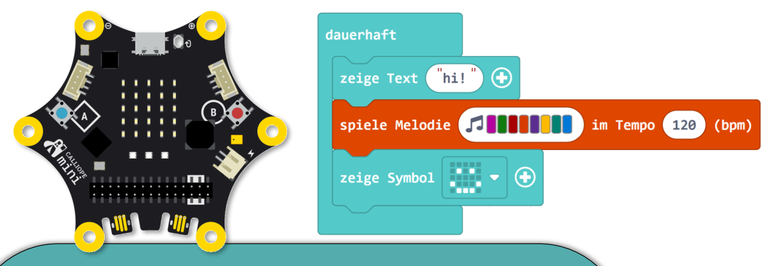
From CAD design and 3D printing to coding and assembly

Start

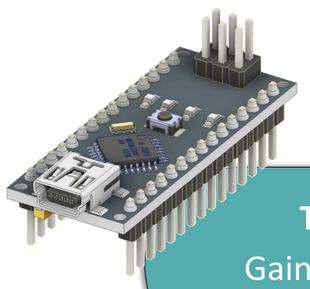
1 — CAD and 3D printing basics
Learn how to design simple 3D-objects and how to print them.



2 — Infinity gearbox
Design and print your own small gearbox.



3 — Basics of programming
Learn the basics of block-based programming.



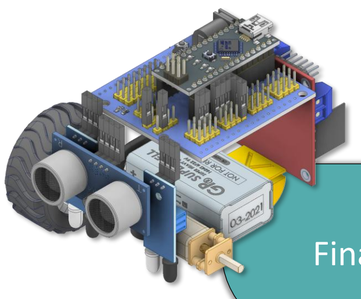
```
void setup() {
  // put your setup code here, to run once:

}

void loop() {
  // put your main code here, to run repeatedly:
```

4 — Text-based programming
Gain first insights into text-based programming with Arduino.

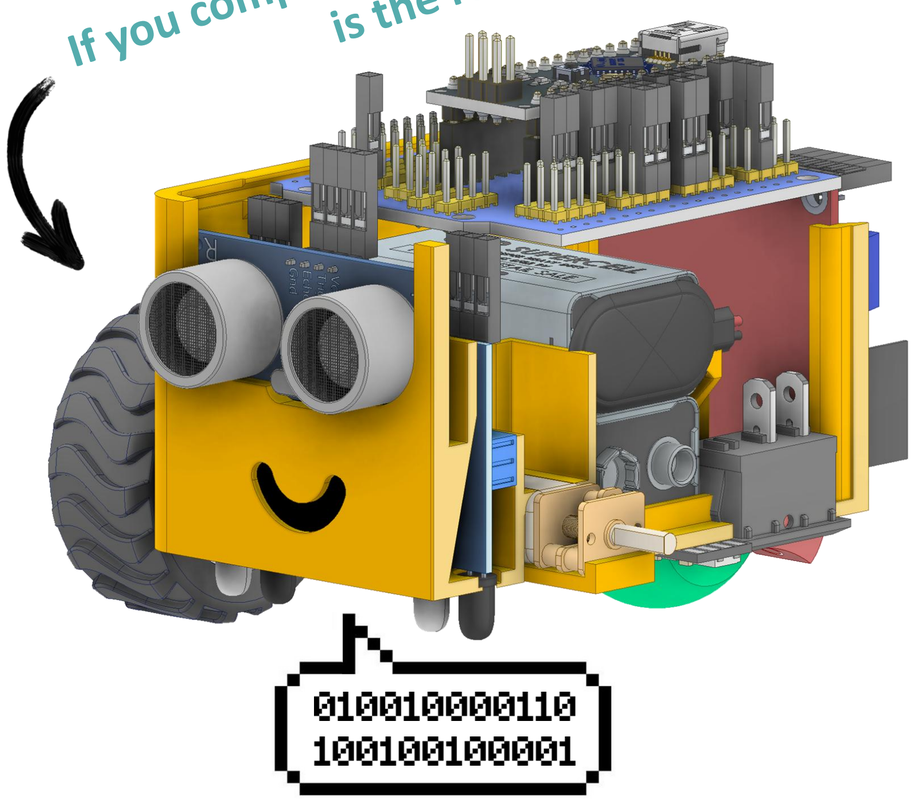
5 — Designing the robot housing
The housing and the slider are real challenges.



6 — Assembly of the robot
Finally, you will wire, solder and program your robot.

End

If you complete all learning steps, this is the result:



www.technikwerkstatt40.de

YouTube
Self-directed learning through video tutorials