1.7 Robotics Equipment

Fischertechnik and LEGO are both brands of construction toy systems that allow users to build and create a wide range of structures and mechanisms. Both systems use a modular approach, with a variety of interlocking parts that can be easily snapped together.

However, there are some key differences between Fischertechnik and LEGO parts:

Material: Fischertechnik parts are made of a durable, high-quality plastic called polycarbonate, which is known for its strength and resistance to wear and tear. LEGO parts are made of a softer plastic called acrylonitrile butadiene styrene (ABS), which is more flexible and less durable.

Precision: Fischertechnik parts are designed with high precision and tolerances, which allows for more accurate and stable constructions. LEGO parts have slightly looser tolerances, which can make them more prone to wobbling or sagging.

Size and shape: Fischertechnik parts are generally smaller and more compact than LEGO parts, which allows for more detailed and precise constructions. LEGO parts are larger and more blocky, which makes them more suitable for building larger structures.

Functionality: Fischertechnik parts are designed with a focus on mechanical and electrical functionality, and include a wide range of components such as gears, motors, and sensors. LEGO parts are more geared towards aesthetics and playability, and include elements such as minifigures and decorative elements.

Price: Fischertechnik parts tend to be more expensive than LEGO parts, due to their higher quality and greater functionality.

Overall, Fischertechnik and LEGO are both excellent construction toy systems, and the choice between them will depend on the specific needs and preferences of the user.

We can divide the equipment for robotics into three different groups: 1. Electronics, 2. Computer science, 3. Engineering.

1.7.1 ELECTRONICS

- WIRES
  - 4x 15cm
  - 4x 10cm
- CONNECTORS
  - 8x 2.5mm FT
  - screw driver

- RESISTORS
  - 2x 330
  - 2x 3.3k
  - 2x 33k
  - 2x 330k
  - 10k potenciometer (with wires)
- NON-LINEAR RESISTORS AND SENSORS
  - 1x foto-tranzistor FT & aperature
  - 1x reed switch
  - 1x key FT
  - IR distance sensor
- ACTUATORS
  - light bulb
  - 2x DC motor FT
  - 1x servo-motor
  - 1x servo attach
  - LCD (i2c)

1.7.2 COMPUTER SCIENCE

- Arduino UNO controller
- modul RobDuino-v2 (shield)
- Arduino UNO adapter -> FisherTechnik (3D print)
- USB kabel
- battery charger for 2x18650 LiIon battery
- 2x 18650 LiIon battery's
- 9V Power Supply

1.7.3 MECHANICAL ENGINEERING

1.7.3.1 CONSTRUCTION ELEMENTS

- 12x square block 15x15x30mm
- 6x square block 15x15x15mm
- 2x square block 7.5x15x30mm
- 5x square block 7.5x15x15mm

- 3x “L” profile 15x15x45mm
- 2x “L” profile 15x15x30mm
- 4x rim R1” fiksno
- 2x tire 11/90R1
- 4x square holder 15x15x15mm
- 2x angled block 60° 15x15mm
- 2x angled block 30° 15x15mm
- 1x pin rail 15mm
- 2x M4 nuts and bolts L=25mm

1.7.3.2 GEARING (GEARS and GEARBOX)

- 2x gearboxes with shafts
- 2x sliding bearing
- 1x axle/shaft 45mm
- 1x axle/shaft 90mm
- 2x mechanical pivot joint
- 2x sliding bearing
- 2x spojka osi 15mm (BCA)
- 1x objemka 5mm (RD)
- 1x worm gear with attachment nut
- 1x gear fi48mm Z30
- 1x os elise 30mm

1.7.4 OPTIONAL

- rubber bands
- black isolating tape