

Weekly Presentation

Week 43

Luleå University of Technology

October 26, 2020

Overview

1 Project structure

- Team
- Time plan

2 Engineering challenge

Group members

- Y-students

- ▶ Martin Blaszczyk - Project leader and object detection
- ▶ Edward Cedergård - Arm and gripping tool
- ▶ Niklad Dahlqvist - Arm and gripping tool
- ▶ Måns Norell - Movable base

- D-students

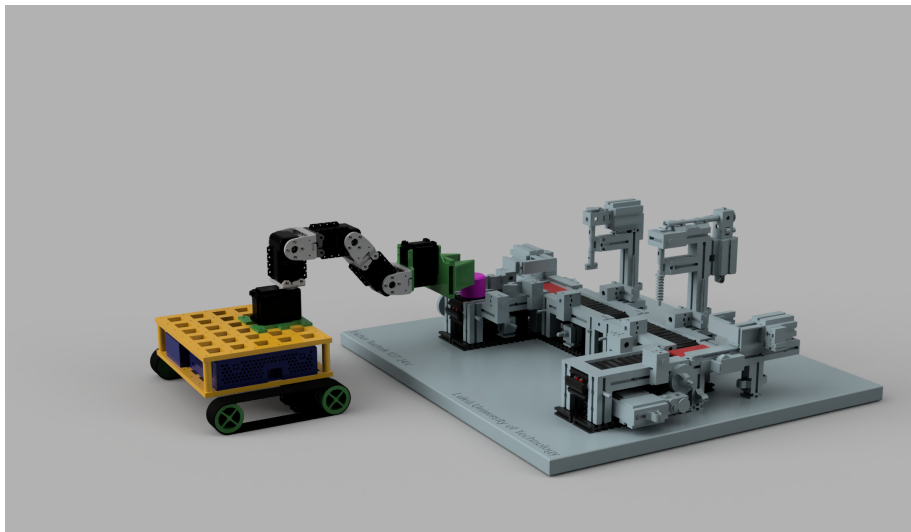
- ▶ Edward Källstedt - Object detection
- ▶ Albin Martinsson - Arrowhead and Git

Overall timetable

Sep	Oct	Nov	Dec
Concept generation	Evaluation	Evaluation	
Theory	Prototyping	Evaluation	Finishing up
Simulation	Evaluation	Evaluation	
Prototyping	Final Design	Evaluation	

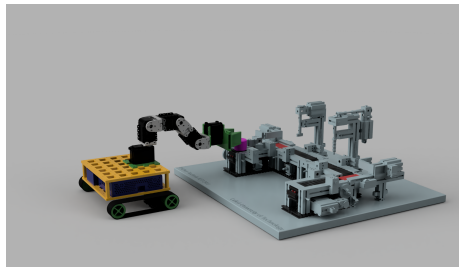
Engineering Challenge

Concept rendering (video)



Requirements

- Navigate the factory floor
 - ▶ Movable base
 - ▶ Line following
 - ▶ QR-detection
 - ▶ Object detection (ToDo)
- Pick up the Object
 - ▶ Robot arm with smart Servos
- Arrowhead integration
 - ▶ Certificates
 - ▶ Instructions



NVIDIA Jetson Nano

- Runs Ubuntu
- Two camera ports (CSI)
- More powerful GPU than RPi



Cameras

- Compatible with NVIDIA and RPi
- Small package
- 8 megapixels
- Video:
 - ▶ 1080p @ 30 fps
 - ▶ 720p @ 60fps

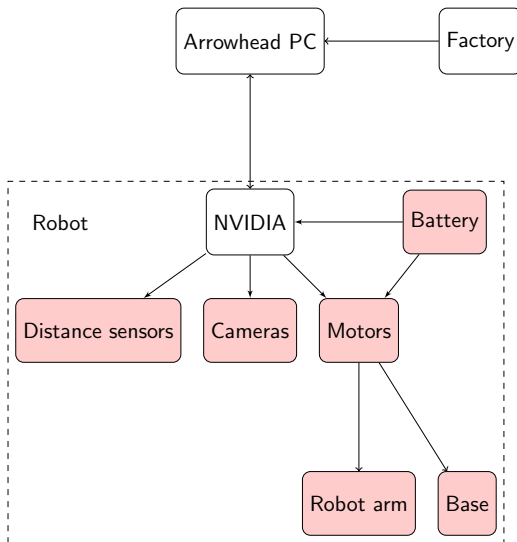


Dynamixel Smart Motors

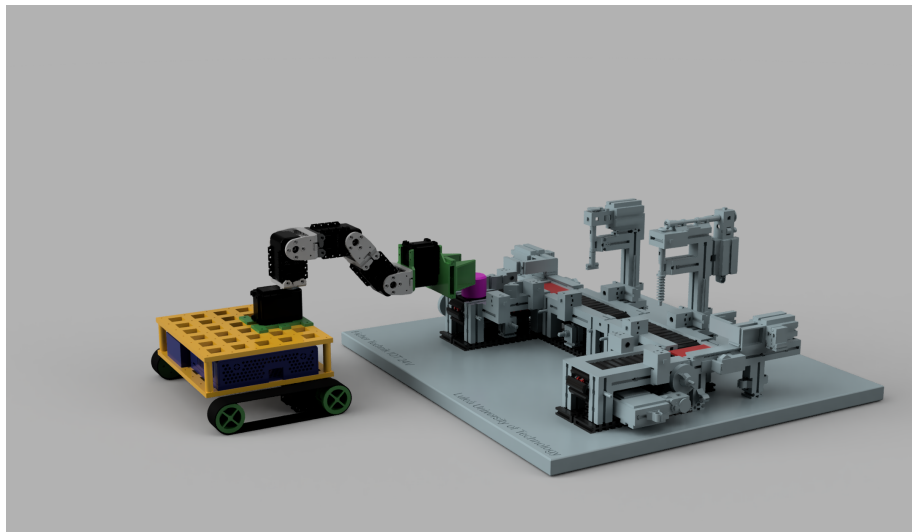
- Connects in series
- Angle and wheel mode
- Feedback



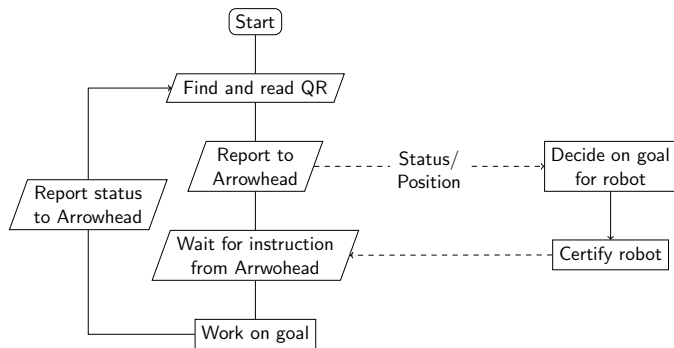
Hardware



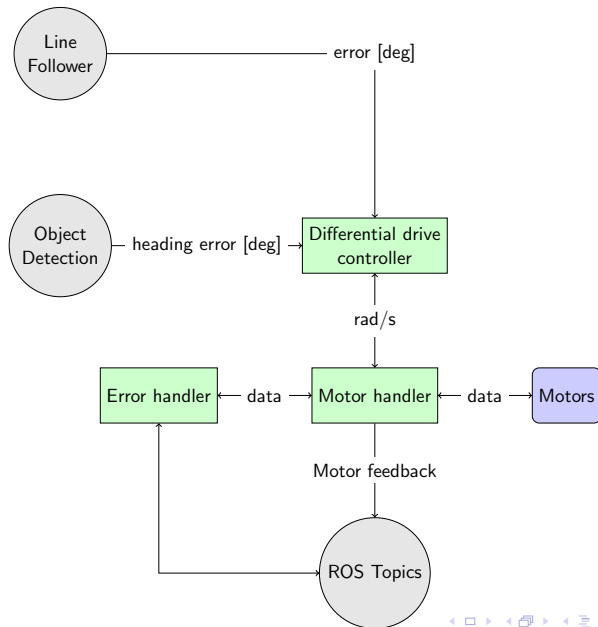
Concept rendering



Positioning - Arrowhead



ROS-Base example



Questions?