Parking Team – Week 4

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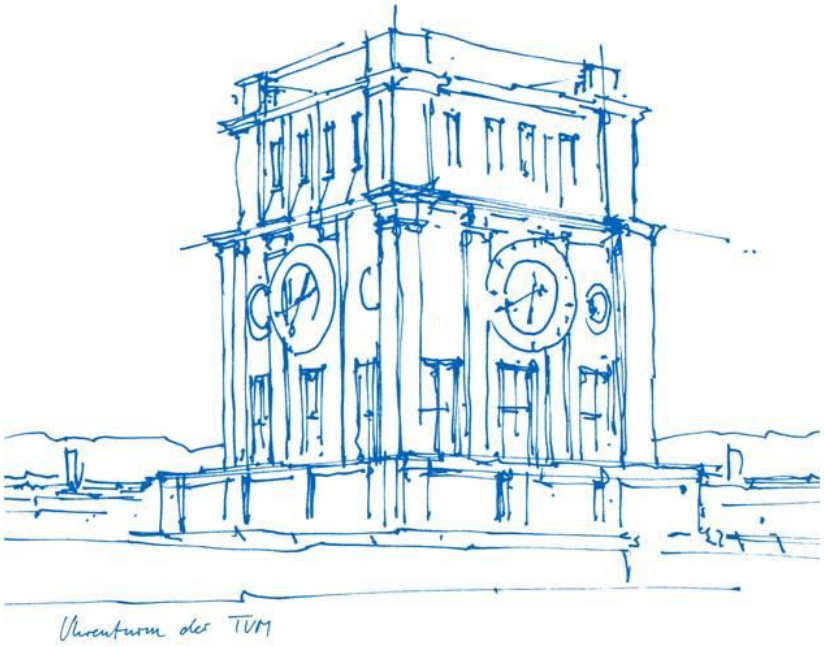
16.05.2019



What we have achieved so far

- **Deploy the Rover**
- **Test Scenario 1 – Move straight to the goal location**
- **Installation and Testing of LiDAR / Camera Vision**
- **Creation of Application Frame**
- **Design of Scheduling**

Work of last week

- **Vision with Camera and Raspberry Pi**
  - **Problem: QR Code Detection not reliable**
  - **Fish Eye Camera results in distortion of pictures (s. next slide)**

  -> Calibration of Camera with Chessboard: failed

  -> Calibration / Better Recognition of QR Code

- **Established a framework for RPLiDAR**
  - **Installation of SDK on Linux and Windows**
  - **Installation of Robot Operating System (ROS Kinetic)**
  - **Successful run with Hector Slam on first floor (s. video)**

  -> Communication Pi2Pi / Pi2PC

- **Creation of Application Frame & Design of Task Scheduling**

Camera Distortion

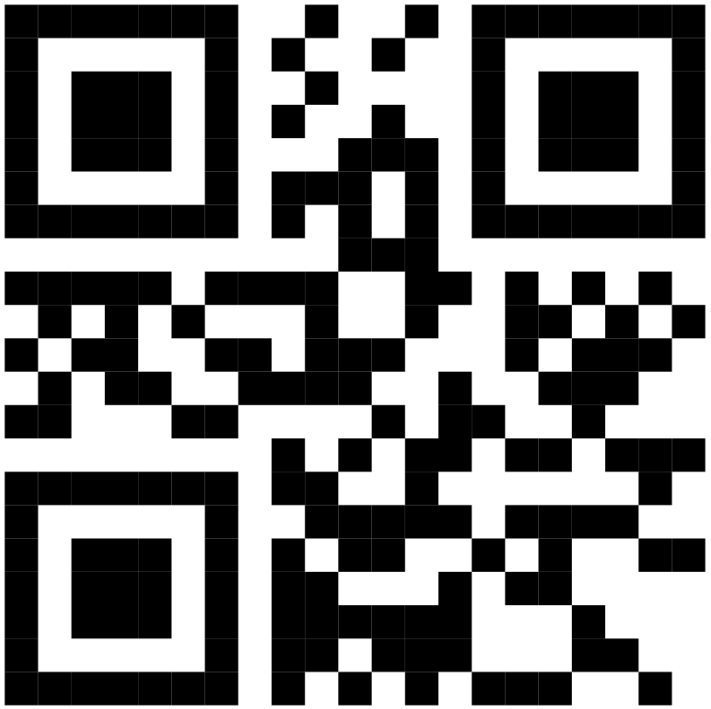
✗

✓

✗

✗

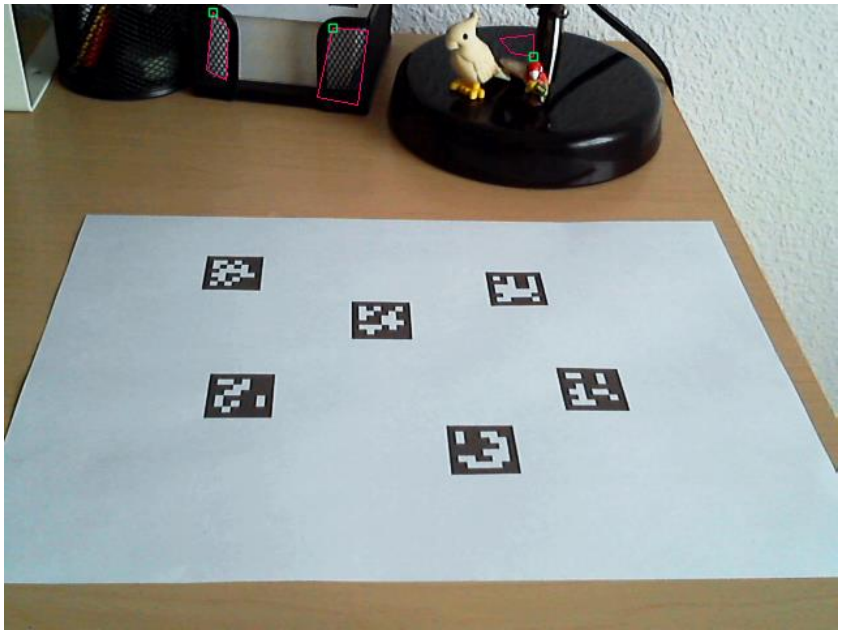
QR Code Distortion

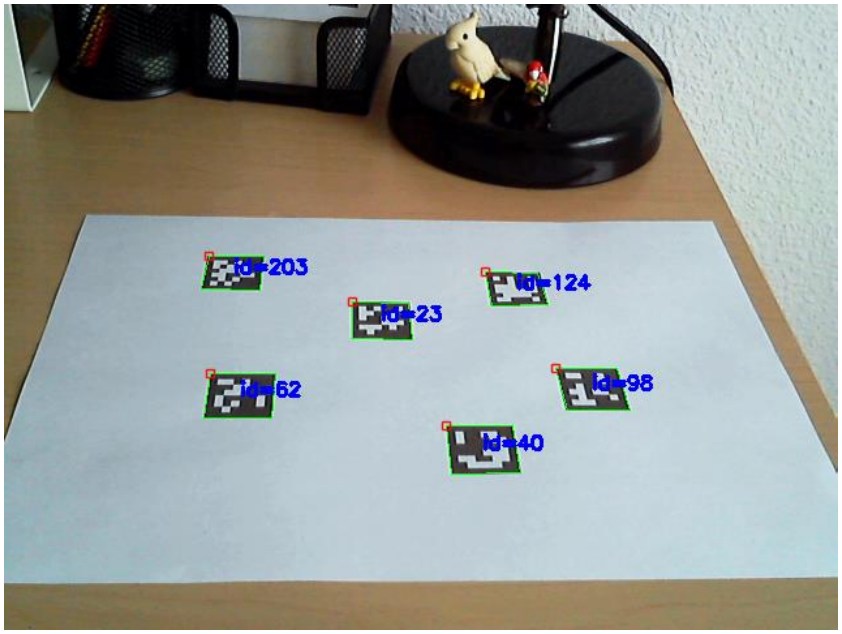


✓

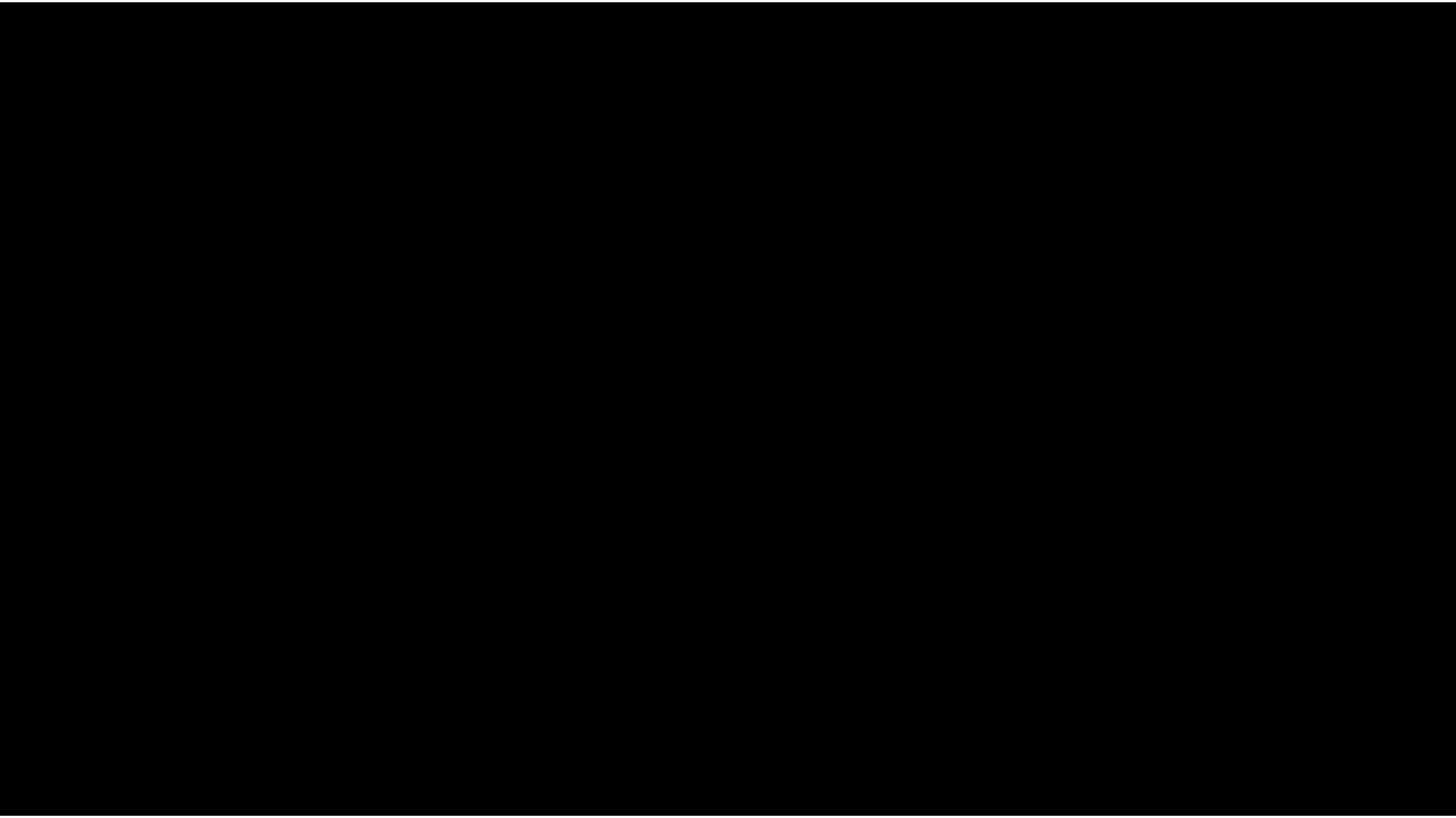
✗

Detection with ArUco

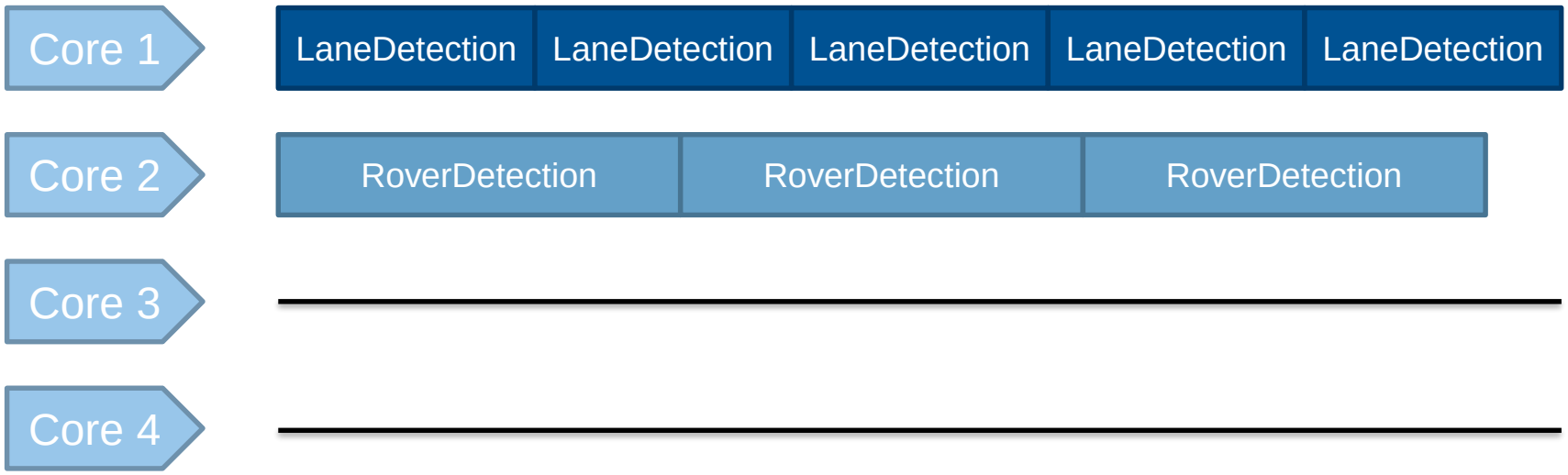




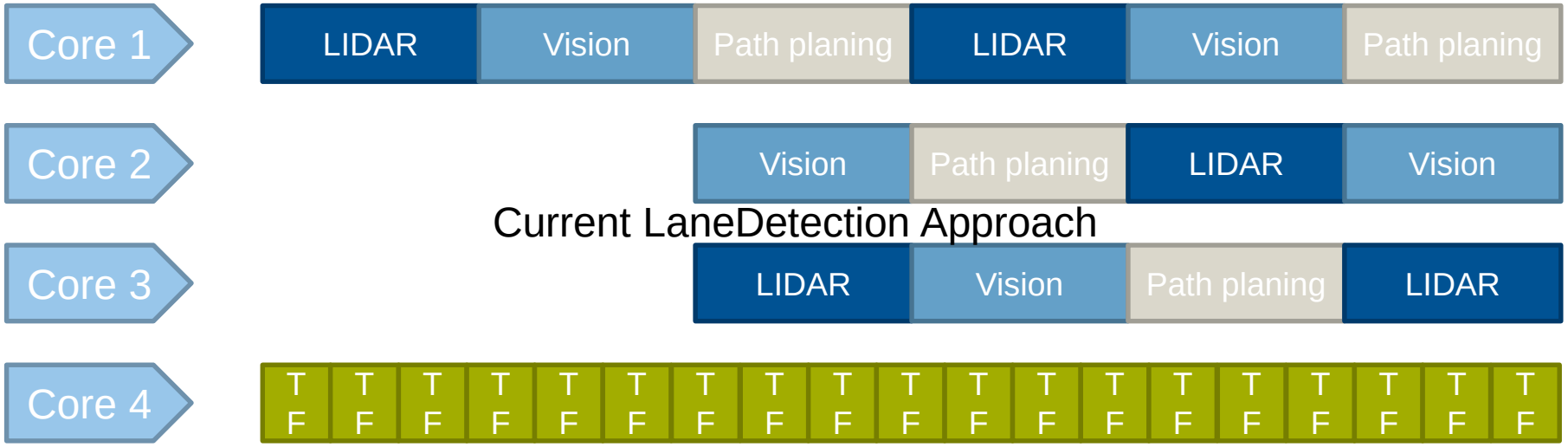
Results



Current LaneDetection Approach



New Scheduling Concept



*TF = Trajectory Following

Future Work

- **Vision with Camera and Raspberry Pi**
  - Use of ArUco markers
  - Calibration of camera / Better Rocog
- **Sensoring for RPLiDAR**
  - Enable wireless communication
  - SLAM Generating with Pi
- **Sensor Fusion / Integration with Driving Function (Scenario 2/3)**