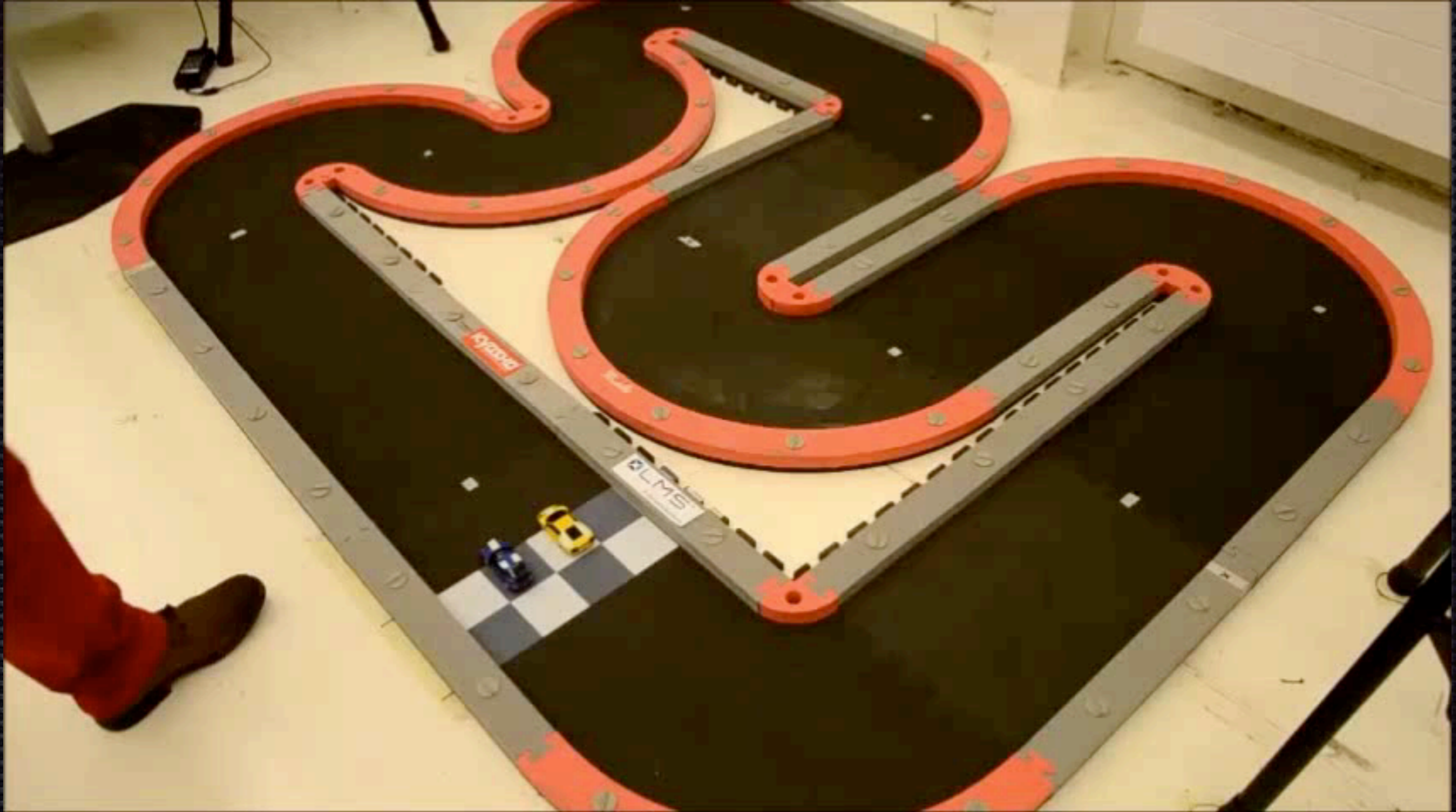




# Race Car Control Laboratory

<http://www.syscop.de/teaching/ws2017/rccl>







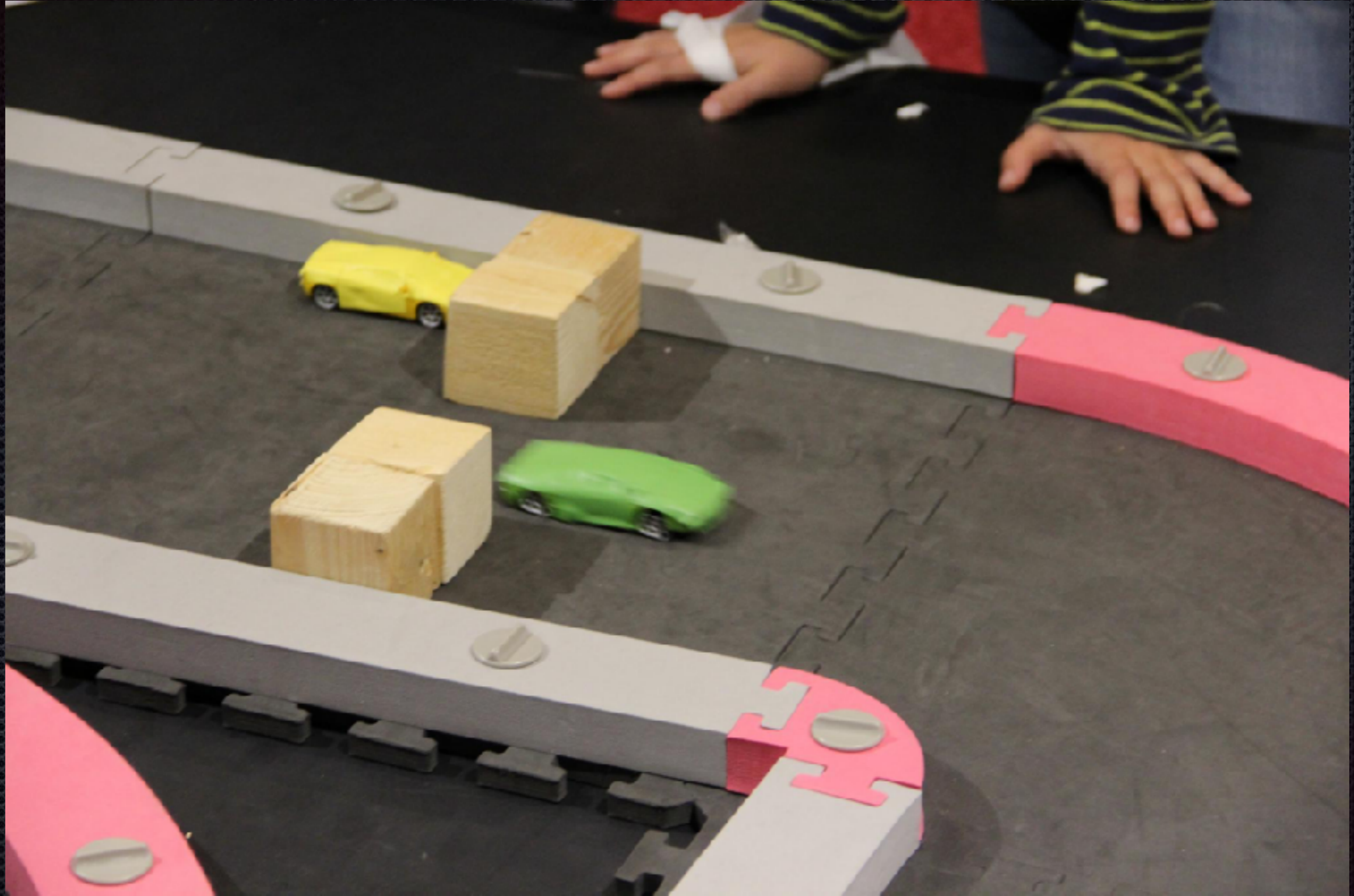


Science Days Europapark Oct 2016











# Course

- ✦ Loosely guided project work
- ✦ Teamwork (2 students per team)
- ✦ 6.0 ECTS (180 hours of work)



# Projects

- ✦ No common project
- ✦ Different sub-projects (see next slides)



# Project 1

- ✦ Improvement of the vision system
- ✦ Vision processing, computer vision
- ✦ Different shapes, colours, ...?
- ✦ OpenCV? C++?
- ✦ Virtual obstacles



# Project 2

- ✦ Online estimation
- ✦ Estimate position, velocity, orientation
- ✦ Now: Kalman Filter. Look into tuning methods
- ✦ Extended Kalman Filter?



# Project 3

- ✦ System identification of nonlinear vehicle model
- ✦ CasADi ([www.casadi.org](http://www.casadi.org)) as optimization framework
- ✦ Knowledge of MSI required (current or past students)



# Project 4 (optional)

- ✦ 3D visualisation from driver's perspective
- ✦ VDrift environment ([vdrift.net](http://vdrift.net)) or other
- ✦ Strong programming, computer graphics background required



# Project x?

- ✦ If you have a good idea for a project, don't hesitate to ask the tutors