htl bildung mit zukunft	**HÖHERE TECHNISCHE BUNDESLEHRANSTALT HOLLABRUNN** **COLLEGE of ENGINEERING**
	Department: **Electronics and computer engineering**

DIPLOMA THESIS
Documentation

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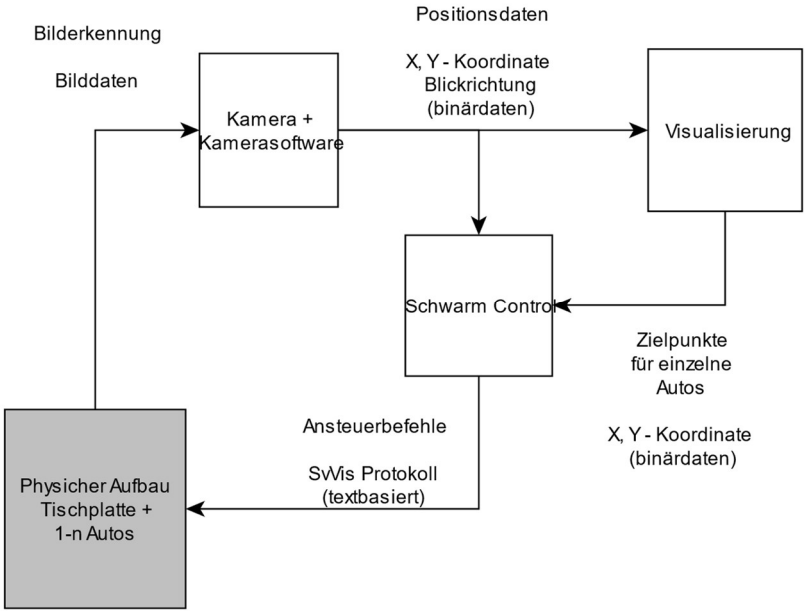
Form Academic year	5BHEL
Topic	Camera Controlled Swarm Robots
Co-operation Partners	-

Assignment of Tasks	One or more autonomous vehicle (powered by an STM32F107RB + MDDS Board) should get detected by an camera that is attached 1,5 metres above the table. The positions of the vehicles should be converted into an x-y coordinate grid. The produced data should then be sent to our visualisation and simulation for correction purposes. A picture of a path should be drawn. The generated path should then be sent of to the Swarm Controll. Where the path will be transformed into vehicle commandos.

Realisation	For proper detection an “DFK 33UX273” from ImagingSource was used. It’s connected via USB to an Laptop. The visualisation and simulation was programmed in “C++” + “OpenGl” which draws the cars onto the screen in Realtime. Swarm Controll uses an technology called “SvVis”. The vehicles run on an self-implemented RTOS-Software (Real Time Operating System) which transforms the vehicle commandos into engine movement.

Results	An older version of the “SvVis” was used and altered to fit our purposes. An test track with a bracket for the camera was built. The tracking software was programmed in python. Vehicle Controll software was written with RTOS. The visualisation and simulation was programmed in “C++” + “OpenGl” for out specific purpose.

Illustrative Graph, Photo (incl. explanation)	 The graph above pictures the whole System. There you can see the three main components. Tracking, Swarm Controll and Visualisation and Simulation. The communication between the individual blocks is realised in TCP. The communication between laptop and cars can be established in two ways WLAN, Bluetooth.

Participation in Competitions Awards	-

Accessibility of Diploma Thesis	HTL Hollabrunn Anton Ehrenfriedstraße 10 2020 Hollabrunn

	Examiner	Head of College / Department
Approval (Date / Sign)		