University of Magdeburg

School of Computer Science

Bachelor Thesis

Mixed-reality Simulation of Quadcopter-Swarms

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List of Code Listings

List of Acronyms

ASIL	Automotive Security Integrity Level
E/E	Elektrisch/Elektronisch
EHF	Element Hiding Factor
FCM	Factor-Criteria-Metrics
GQM	Goal Question Metric
LBC	Loose Block Cohesion
LCC	Loose Class Cohesion
MDA	Model Driven Architecture
MOOD	Metrics for Object Oriented Design
NOE	Number of Elements
OMG	Object Management Group
PES	Porsche Engineering Services GmbH
PHG	Produkthaftungsgesetz
SysML	Systems Modeling Language
TBC	Tight Block Cohesion
TCC	Tight Class Cohesion
TeSiKo	Technisches Sicherheitskonzept
UML	Unified Modeling Language

1. Introduction

1.1 Motivation

[project context of this work]

[who needs the results]

[what are the problems to be solved?]

[what are existing solutions, what's different in this approach, what is the improvement]

1.2 Problem Statement

[what are the goals] [how are we going to reach this goals] [what is to be done]

1.3 Outline

[short description of the sections]

2. Theory

2.1 Quadcopter Modelling

[fundamental physics]

[particle simulation]

2.2 Vrep

[connecting visual representation and physical model]

[simulation structure (lua scripts, scene structure]

[lua module structure]

[external interface (signals)]

2.3 Communication/Ivy-Bus

3. Implementation

3.1 Simulation Environment

[finken parameter estimation]

[controller tuning]

[simulation parameters]

[script structure]

3.2 Communication Link

[link in Vrep (signals]

3.3 Quadcopter

4. Evaluation

[how realisitc is the simulation?] [which properties can be modelled well, which can't?]

4.1 Speed

[]

4.2 Accuracy

4.3 |

Stability

4.4 usability

5. Conclusion

5.1

[do the results show that it works?]

5.2 Future Work

Bibliography

Hiermit erkläre ich, dass ich die vorliegende Arbeit selbständig verfasst und keine anderen als die angegebenen Quellen und Hilfsmittel verwendet habe.

Magdeburg, den 29. November, 2013