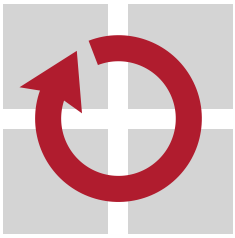
TECHNISCHE FAKULTÄT

Lehrstuhl für Informatik 4

Verteilte Systeme und Betriebssysteme



Toller Student

Über das Verhältnis zwischen Bachelorarbeit und resultierender Note

Bachelorarbeit im Fach Informatik

11. Oktober 2011

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Über das Verhältnis zwischen Bachelorarbeit und resultierender Note

Bachelorarbeit im Fach Informatik

vorgelegt von

Toller Student

geb. am 1. Dezember 1985
in Hier

angefertigt am

Lehrstuhl für Informatik 4
Verteilte Systeme und Betriebssysteme

Department Informatik
Friedrich-Alexander-Universität Erlangen-Nürnberg

Betreuer:	**Wosch**
Betreuender Hochschullehrer:	**Prof. Dr.-Ing. Wolfgang Schröder-Preikschat**
Beginn der Arbeit:	**1. Mai 2011**
Abgabe der Arbeit:	**11. Oktober 2011**

Erklärung

Ich versichere, dass ich die Arbeit ohne fremde Hilfe und ohne Benutzung anderer als der angegebenen Quellen angefertigt habe und dass die Arbeit in gleicher oder ähnlicher Form noch keiner anderen Prüfungsbehörde vorgelegen hat und von dieser als Teil einer Prüfungsleistung angenommen wurde.
Alle Ausführungen, die wörtlich oder sinngemäß übernommen wurden, sind als solche gekennzeichnet.

Declaration

I declare that the work is entirely my own and was produced with no assistance from third parties.
I certify that the work has not been submitted in the same or any similar form for assessment to any other examining body and all references, direct and indirect, are indicated as such and have been cited accordingly.

(Toller Student)
Erlangen, 11. Oktober 2011

Abstract

about 1/2 page:
(1) Motivation (Why do we care?)
(2) Problem statement (What problem are we trying to solve?)
(3) Approach (How did we go about it)
(4) Results (What's the answer?)
(5) Conclusion (What are the implications of the answer?)

Kurzfassung

Gleicher Text in Deutsch

Inhaltsverzeichnis

Kapitel 1

Introduction

general motivation for your work, context and goals: 1-2 pages

- **Context:** make sure to link where your work fits in
- **Problem:** gap in knowledge, too expensive, too slow, a deficiency, superseded technology
- **Strategy:** the way you will address the problem

1.1 Sample Section

The following samples explain how to insert cross-references, figures and tables, how to set math, algorithms and program code, how to add references, and how to use acronyms.

1.1.1 Cross References

Use the `\label` and `\cref` commands for cross references, e.g. to Abschnitt 1.1.1.

1.1.2 Figures

Abbildung 1.1 shows the distribution of the nodes in the sample setup at time $t = 0$, as well as the initial coverage with a sensing radius of 30 m and the communication graph for a communication range of 50 m.

1.1.3 Subfigures

Abbildungen 1.2a bis 1.2b show the distribution of the nodes in the sample setup at time $t = 0$, as well as the initial coverage with a sensing radius of 30 m and the communication graph for a communication range of 50 m.

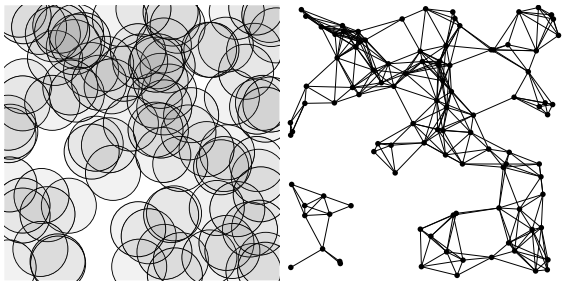
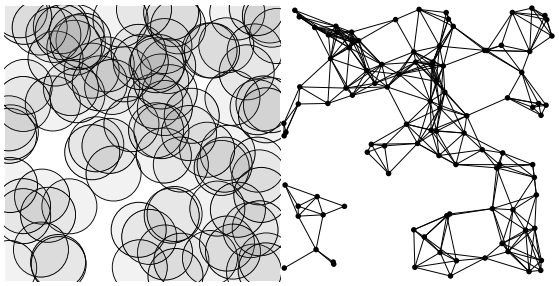


Abbildung 1.1 – Coverage and connectivity for a sample replication at time $t = 0$



(a) coverage **(b)** connectivity

Abbildung 1.2 – Subfigures showing coverage and connectivity for a sample replication at time $t = 0$

1.1.4 Tables

Tabelle 1.1 gives an overview of the discussed application classes.

1.1.5 Math

Simple inlined equations: $\zeta(t) = \min(\zeta_{**}(t))$. The same in a numbered equation, i.e. Gleichung (1.1):

$$\zeta(t) = \min(\zeta_{**}(t)) \tag{1.1}$$

Equations covering multiple lines should be aligned. Note that the numbering is added automatically, independent of whether the equation is actually referenced or not:

Class	application examples	lifetime aspects
Critical, coverage	Forest fire detection, flood detection, nuclear/chemical/biological attack detection, battlefield surveillance, intrusion detection	$c_{ca}/c_{ct}/c_{cb}$, c_{ln}, c_{la}, c_{lo}
Critical, no coverage	Monitoring human physiological data, military monitoring of friendly forces, machine monitoring	c_{cc}, c_{ln}, c_{la}, c_{lo}
Noncritical, coverage	Agriculture, smart buildings, habitat monitoring (sensors monitor the inhabitants in a region)	$c_{ac}/c_{tc}/c_{bc}$, c_{cc}, c_{sd}
Noncritical, no coverage	Home automation, habitat monitoring (sensors are attached to animals and monitor their health and social contacts)	c_{cc}, c_{sd}

Tabelle 1.1 – Sensor network applications

$$sd_{max} = max((t_{i+1} - t_i) : \zeta(t_i) < 1, i \in [0, |T| - 1]) \tag{1.2}$$

$$\psi_{sd}(t) = \begin{cases} \dfrac{\Delta t_{sd}}{sd_{max}} & sd_{max} > 0 \\ 1 & sd_{max} = 0 \end{cases} \tag{1.3}$$

$$\zeta_{sd}(t) = \frac{\psi_{sd} - cl_{sd}}{c_{sd} - cl_{sd}} \tag{1.4}$$

1.1.6 Units

Units should be set using the `\SI` command: the measurements show that the car was accelerating at $5\,\mathrm{m/s^2}$ until it reached its final speed of $100\,\mathrm{km/h}$. Longer unitless numbers or ranges can be typeset using the `\num` and `\numrange` commands, respectively: The number $12\,345\,678$ lies in the range of $10\,000\,000 \ldots 20\,000\,000$. Tabelle 1.2 gives an example of how to typeset numbers and units in tables.

factor		value	unit
M	vehicle mass	1.3250×10^3	kg
g	gravitational constant	9.81	$\mathrm{m/s^2}$
ϑ	road grade	0	°
α		1.1100	g/s
δ		1.9800×10^{-6}	$\mathrm{g\,s^2/m^3}$

Tabelle 1.2 – EMIT factors for a category 9 vehicle

1.1.7 Algorithms

Based on the periodically transmitted `hello` messages, the joining node gets information about its physical neighbors and their adjacent nodes. Algorithmus 1.1 depicts the handling of `hello` messages.

Require: Locally stored state of all neighbors in set N
Ensure: Maintain neighbor set N and set virtual address
1: Receive neighbor information from node N_i
2: **if** $N_i \notin N$ **then**
3: $N \leftarrow N_i$
4: **else**
5: Update $N_i \in N$
6: **end if**
7: **if** $P == -1$ AND (Time() $-$ OldTime) $> T_{ps}$ **then**
8: OldTime $\leftarrow$ Time()
9: SetMyPosition()
10: **end if**

Algorithmus 1.1 – Handle `hello` messages

1.1.8 Program Code

Program code should be omitted, but if absolutely necessary, it should be set as seen in Listing 1.1.

1.1.9 References

To further evaluate the applicability of our definition, we analyzed sensor network applications as surveyed in [**?**, **?**, **?**]. Concerning the importance of different lifetime criteria, most of the application scenarios can be grouped into two main classes with two sub-classes each [**?**].

```
1  APPLICATION("printU", 192, arg)
2  {
3      // Set Priority
4      NutThreadSetPriority(16);
5      // main() loop
6      for (;;) {
7          putchar('U');
8          NutSleep(125);
9      }
10 }
```

Listing 1.1 – Sample application

1.1.10 Acronyms

Acronyms shoud be explained when first used. Latex helps, e.g. Mobile Ad Hoc Networks (MANETs) have been frequently used as examples for the development of Wireless Sensor Network (WSN) applications.

1.1.11 TODOs and FIXMEs

You can use the the `\TODO` command to add short "sticky notes" to your document.

This is what a TODO looks like

This will also trigger generation of a list-of-TODOs at the end of the document. The same goes for the `\FIXME` command.

This is what a FIXME looks like

Kapitel 2

Fundamentals

Fundamentals / environment and related work: 1/3

- comment on employed hardware and software
- describe methods and techniques that build the basis of your work
- review related work(!)

Kapitel 3

Architecture

Developed architecture / system design / implementation: 1/3

- start with a theoretical approach
- describe the developed system/algorithm/method from a high-level point of view
- go ahead in presenting your developments in more detail

Kapitel 4

Analysis

Measurement results / analysis / discussion: 1/3

- whatever you have done, you must comment it, compare it to other systems, evaluate it
- usually, adequate graphs help to show the benefits of your approach
- caution: each result/graph must be discussed! what's the reason for this peak or why have you ovserved this effect

Kapitel 5

Conclusion

Conclusion: 1 page

- summarize again what your paper did, but now emphasize more the results, and comparisons
- write conclusions that can be drawn from the results found and the discussion presented in the paper
- future work (be very brief, explain what, but not much how)

Abkürzungsverzeichnis

WSN	Wireless Sensor Network
MANET	Mobile Ad Hoc Network

Abbildungsverzeichnis

Tabellenverzeichnis

Offene Punkte