



Seminar Technische Informatik WS1011

Scientific Work

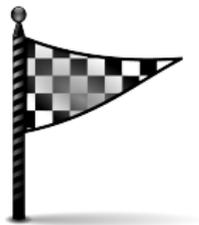
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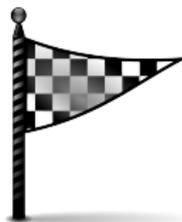
Institute of Computer Science

29.10.2010

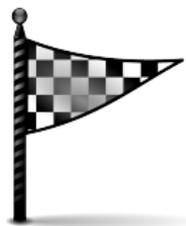
1. Seminar Goals
2. Literature
3. Preparation
4. Telling a Story
5. Structure
6. Scientific Community
7. Plagiarism
8. Figures
9. Literature
10. Presentation
11. Templates
12. Summary
13. Schedule



- Introduction of advanced topics based on **Telematics** and **Mobile Communications**
- Familiarization with a new topic
- Literature research, related work
- Critical review and discussion of publications
- Comparison of results and statements
- Filtering the essential from the unimportant
- Technical writing
- Learning and practicing giving a talk



- Writing a seminar report in the IEEE conference style, 7-8 pages
- Reading group
- Presentation of the seminar topic and discussion
 - Presentation time: 25-30 minutes
 - Questions: 5-10 minutes
 - Advice: Practice/optimize presentation with supervisor
 - Seminarists should be able to answer questions
- Participation in presentations





Justin Zobel *Writing For Computer Science*
Springer, 2009, [Link](#)



Robert A. Day, Barbara Gastel *How to Write and Publish a Scientific Paper*, Greenwood Press, 6th Edition, 2006
[Link](#)



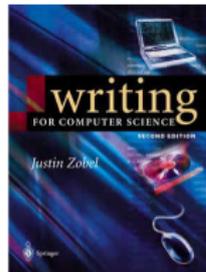
William Strunk, Jr. *The Elements of Style*
Ithaca, N.Y.: W.P. Humphrey, 1918, [Link](#)



Henning Schulzrinne *Writing Technical Articles* [Link](#)



Harry S. Delugach *How To Give A Terrible Talk*
Univ. of Alabama in Huntsville, [Link](#)





Important questions regarding the topic:

- What are the goals of the topic? What is the focus?
- What is the central problem and application scenario?
- What is the common / standard approach for the problem?
- Shall I give a survey or comparison of particular approaches?
- Who is my target audience?
- Which information has to be introduced for an understanding of the topic?
- Are there novel and surprising results and findings?



Note: Discuss these issues early on!

The talk and report shall educate the audience

- Present new information based on knowledge learned in classes
- From ideas to results
- Logical closure; answer all core questions and explicitly state remaining questions
- Discuss advantages and disadvantages of published approaches; compare approaches
- Use common scientific writing style: stick to facts, matter-of-fact



Note: Keep you reader interested



- Scientific publications have a common structure
- Seminar report should have similar structure

Gossip Routing in Wireless Mesh Networks

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{Rhyss, gueny, jantsch, shof}@inf.fu-berlin.de

Abstract—Gossip routing is an approach to reduce the complexity of finding a wireless network. A study by Hase et al. evaluated different gossip routing schemes in combination with regular and random contact topologies. Using the IEEE 802.11 standard, four different gossip routing variants and the requirement setup are evaluated as well as issues regarding the replication of the network structure. With this study we demonstrate that even small wireless network deployments show a limited behavior. **Index Terms**—Wireless Mesh Networks (WMNs), Gossip Routing, Probabilistic Forwarding, Tether.

1. INTRODUCTION

Routing and forwarding are most important and essential services provided by all kinds of computer networks. There are many studies that have evaluated the performance of different routing protocols either in simulation environments or using testbeds. As a general principle, a routing protocol shall ensure reachability of all nodes while at the same time minimizing overhead. Based on an ad-hoc network communication principle like a one-to-many scenario and as an essential mechanism of many proactive, reactive, and hybrid routing protocols.

Proactive protocols periodically run a route discovery procedure to update state information, the one class of proactive protocols. Link state routing protocols use topology information to all nodes in the network which has been gathered by evaluating received HELLO messages. The network wide dissemination of this data can be achieved by flooding where all nodes relay received broadcast messages to their neighbors. One such example is the Open Shortest Path First (OSPF) protocol [1] which uses flooding based on multicast addressing.

Reactive protocols utilize the state discovery slightly different, but also allow only on flooding. Initially, when no information is available about the route a route request is possible. In addition, the packet is stored and a route discovery procedure is started. A route discovery message is sent to all neighbors and must often be flooded over the whole network. Flooding is a very simple mechanism, that is deployed in routing protocols at least in the initial stage. Once routes have been found or the nodes in the network have reached information from some destination, the flooding is either stopped by timeout or is limited to a subset of nodes around the source that directly reply to a route discovery message. To enable this “backtracking” of a routing protocol the flooding has to provide particular properties. First of all, it has to be ensured that the flooded data is received by all nodes

in the network. A violation of this requirement might lead to the inability to find routes or to find suboptimal ones. Secondly, the redundancy has to be minimized. This means that any node should in the best case receive such packet only once. The number of redundant broadcasts shall be minimized to limit the bandwidth usage, which results in less contention and collisions. It is important to note that due to the broadcast principle, an RTS/CTS mechanism cannot be used and broadcasts are always available. In the case of IEEE 802.11 broadcast frames are sent with a low data rate from the initiator (station [2]). Thus, the frames occupy the medium for a significant time, which further encourages an epidemic flooding.

To minimize the redundancy while still retaining full reachability, grouping, also called group routing, can be used. In contrast to flooding, where packets are always forwarded as long as the time to live (TTL) value does not reach zero, the approach is probabilistic. A node forwards a packet with a given probability p or drops it with $1 - p$.

In this paper we take a look at a study about group routing by Hase et al. [3] [4] and discuss their findings. We tried to replicate their experiment in the Distributed Embedded Systems - Inetlab (DES-Embedded) at Freie Universität Berlin, a wireless mesh network (WMN) to get an understanding about the general applicability of grouping as a replacement for flooding in real world scenarios. We show that the performance of group routing depends highly on the position of the source node and which performance can be expected by different group routing variants.

This paper is organized as follows. In Section II the related work is discussed which also introduces the work by Hase et al. Subsequently, in Section III we elaborate the implementation of our group routing. The requirement setup is described in Section IV, the measurements are evaluated and discussed in Section V. The paper ends with a conclusion in Section VI.

II. RELATED WORK

In essentially any flooding in a computer network, the number of packets has to be limited. The TTL field can be used to ensure that packets are dropped after a specified number of hops, yet it does not prevent loss and thus may still lead to high redundancy. There are many additional requirements to limit the number of redundant packets when flooding [5]. The counter-based scheme calculates the number of received duplicates to decide whether the packet shall be forwarded.

- Paragraph of 50 to 200 words
- Reader should be able to evaluate relevance
- Summary of the problem, goals, contribution, and findings of the publications
- Should be concise and only mention important facts
- Shall motivate the reader to continue reading

Abstract
Introduction
Related Work
Contribution
Conclusion

Note: Please don't start abstract with "This paper ..."

- Specifies topic and research domain
- Introduces important information vital to understand the following sections
- States a problem
- Names and (shortly) explains common approaches
- Discusses limitations
- Proposes a novel solution, approach or findings that are focus of this report
- Seminar topic and goals are explicitly named
- Ends with a paragraph describing the structure of the report (sections should be explicitly referenced)

Abstract
Introduction
Related Work
Contribution
Conclusion

- Lists approaches to solve the central problem
- Gives in-detail information to understand the different approaches
- States deficiencies and open problems
- Specific application scenarios should be discussed
- Elaborated the methodology and results of experiments
- Should not contain a review or extensive comparison

Abstract
Introduction
Related Work
Contribution
Conclusion

Note: Sometimes related work is discussed after the contribution

- Personal contribution in the publication
- Comparison and evaluation of the introduced approaches
- Discussion of the methodology and results of experiments
- Discussion whether the approaches are applicable in further/all scenarios
- Explicit summary of findings and result, e.g., as table, graphs, etc
- Statement of issues that have been not considered but are of importance
- The results of the tasks and requirements of the seminar topic should clearly visible

Abstract
Introduction
Related Work
Contribution
Conclusion

Note: Most often the contribution solves all relevant problems; there is limited self-criticism

Note: There are rarely negative results

- Summary of the publication
- Similar to abstract
- Explicit statement of the findings

Abstract
Introduction
Related Work
Contribution
Conclusion

- Scientific community is built on trust . . .
- . . . but peer-reviews shall ensure high quality and prevent plagiarism
- Findings should not be published twice
- Results should be reproducible and plausible
- Scientific methodology should be sound
- Violation of common rules leads to exclusion



“Use or close imitation of the language and thoughts of another author and the representation of them as one’s own original work.”

Stepchyshyn, Vera; Robert S. Nelson (2007). Library plagiarism policies. Assoc of College & Research Libraries. p. 65.

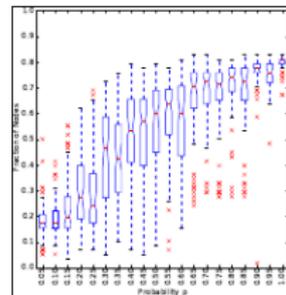
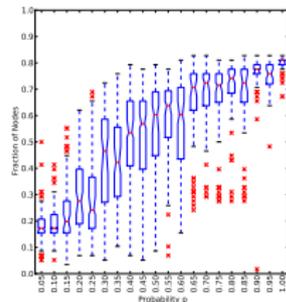


Preventing plagiarism

- Read literature and tell with your own words
- Do not use verbatim copies of text. . .
- . . . or make citation distinguishable from your contribution, reference original publication
- Use quotation marks
- Similar rules for figures and tables
- Create your own figures
- Pure translations also violate rules



- Avoid using figures from publications: often low quality copy
- Use vector-based format: SVG, PDF, EPS
- Use same/similar font type and size as in text
- Colors will be lost when printed b/w
- Caption has to describe what you should see
- Use figures to “loosen up” text
- Invest time in figures: used in report and on slides



Tools: pdffimages, Adobe Illustrator

Publishers

- Association for Computing Machinery, Digital Library: [link](#)
- Springer Verlag, SpringerLink: [link](#)
- Elsevier, ScienceDirect: [link](#)
- IEEE computer society, Digital Library: [link](#)

Databases

- CiteSeer, [link](#)
- CiteSeerX, [link](#)



Have a look at our link section for more: [link](#)

Note: Very often the publishers provide Bibtex entries

- As general rule: 1 slide per minute
- Focus on particular aspects; you cannot tell everything
- Do not under- or overestimate your audience
- Know what you are talking about
- Practice your talk (time!)
- Show slides to supervisor early on
- Prepare additional slides as appendix for the discussion
- Prepare to skip some slides when low on time



- No sentences but headwords, use common abbreviations
- 5+/-2 item rule
- Enumerations with few levels (usually more than one item per level)
- Few colors, fonts types, and font sizes
- Serif-less font, black font on white background
- Few formulas and source/pseudo code
- Use tables and figures



- Colors will look different on beamer, use high contrast colors
- No slide animations (PDF only submission)
- Look at the audience and not the screen
- Avoid using a laser pointer
- Show on projection not with mouse pointer
- Speak at moderate pace, include short breaks (drink something)



Note: Don't worry, everyone is nervous

- Talk to your supervisor
- Discuss issues early on
- Do not start late; finish early
- Meet deadlines
- Read your own writing, let others review your writing
- Use a spellchecker
- Show dedication
- Consider seminar report as trial master/diploma thesis
- Have a look at our link section: [link](#)



Week	Date	Name	Topic
1	22.10.10	Günes	Introduction + Topics
2	29.10.10	Blywis	Related work research, plagiarism, writing a seminar report, creating a presentation, giving a talk
3 ... n		all	Reading group
$n + 1 \dots 16$		individuals	Talks