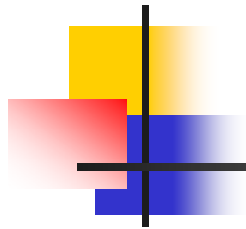


How to write a great SURVEY paper

Markus Strohmaier, Seminar on "Writing Scientific Articles"

adapted from slides by:
Simon Peyton Jones
Microsoft Research, Cambridge

Using thoughts and ideas from:
http://www.cs.ucf.edu/~lboloni/Teaching/EEL6788_2008/slides/SurveyTutorial.pdf



What you do before writing

- Do your research
- Go and read lots of papers! (at least 10-20 on the subject)
- Annotate papers
 - what are their goals? What is their solution? How well do they achieve their goals?
- Discuss the papers with your colleagues
 - Explain the papers
 - Ask / answer questions
- Go and start writing!



Why invest in Writing?

Writing papers is a skill

- Many papers are badly written
- Good writing is a skill you can learn
- It's a skill that is worth learning:
 - You will get more brownie points (better grades, more salary, etc)
 - Your ideas will have more impact
 - You will have better ideas

Increasing importance





The purpose of your paper



Why survey papers?

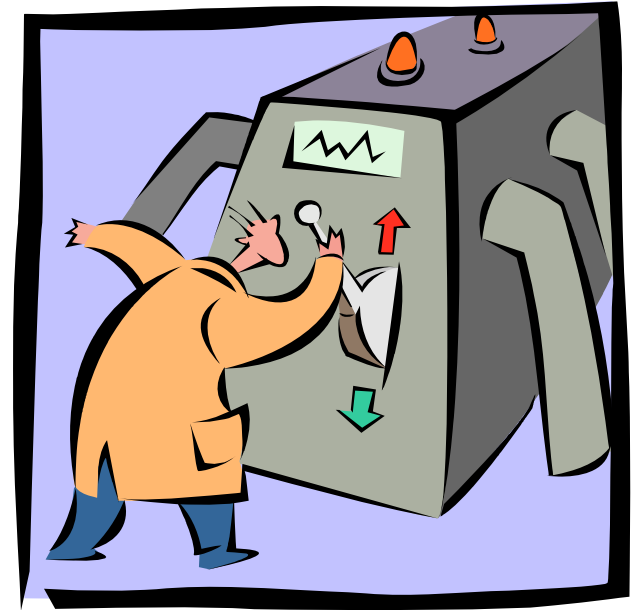
- Your goal:
 - to provide a service to the scientific community
 - survey and review the state-of-the-art of a given scientific topic

Instead of reading 20+ papers to understand what a topic is about, they just need to read your paper.



The purpose of your paper is not...

To describe the
WizWoz
system / paper



- Your reader does not have a WizWoz
- She is primarily interested in overview, structure and contextualization of a particular scientific topic



Your narrative flow

- Here is a scientific topic
- It deals with an interesting problem
- **What it tries to accomplish**
- What tools it uses to accomplish X
- How existing work can be
 - Categorized
 - Structured
 - Compared
- And here is a summary of the most relevant examples (papers) for this field, and how they contribute

I wish I
knew
about X!

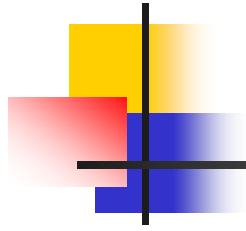
I see why
X is
important.
Ingenious!





Structure (10 pages total, English)

- Title
- Abstract (200 words)
- The scientific topic (~1 page)
- Problem & Research Challenges (~1 page)
- Tools and Approach (2 pages)
- Classification (1 pages)
- Representative Papers (4-5 pages)
- Conclusions (0.5 pages)



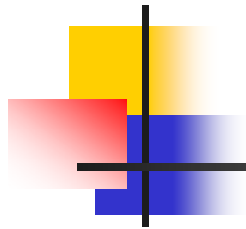
The abstract

1. State the topic
2. Say why it's an interesting topic
(e.g. what does it try to solve?)
3. Say what you are aiming to accomplish
with your survey
4. Say what follows from your survey



Structure (10 pages total, English)

- Title
- Abstract (200 words)
- **The scientific topic** (~1 page)
- Problem & Research Challenges (~1 page)
- Tools and Approach (2 pages)
- Classification (1 pages)
- Representative Papers (4-5 pages)
- Conclusions (0.5 pages)



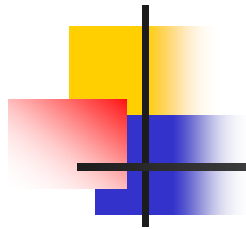
The Scientific Topic

- A clear description of the field
 - What are subfields
 - What is its history
 - Was there a seminal paper starting this field?
 - Or projects / events / systems ?
 - What are the most important conferences on the topic?
 - What is the current status of the field?



Structure (10 pages total, English)

- Title
- Abstract (200 words)
- The scientific topic (~1 page)
- **Problem & Research Challenges** (~1 page)
- Tools and Approach (2 pages)
- Classification (1 pages)
- Representative Papers (4-5 pages)
- Conclusions (0.5 pages)



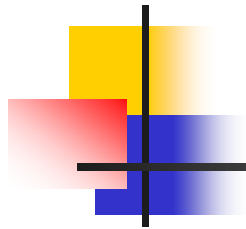
Research Challenges

- This is hard to write, because that's where you have to abstract away from specific papers - you need to integrate and be creative
- Reverse Engineering a vision - given what you know, what is your interpretation of the objectives of this field?
- Identify 3-4 main directions of research in the field



Structure (10 pages total, English)

- Title
- Abstract (200 words)
- The scientific topic (~1 page)
- Problem & Research Challenges (~1 page)
- **Tools and Approach** (2 pages)
- Classification (1 pages)
- Representative Papers (4-5 pages)
- Conclusions (0.5 pages)



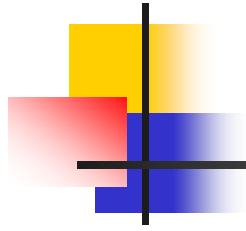
Tools and Approaches

- From what you know about this field, what tools and approaches are applied to tackle the identified research challenges?
- What methods are applied, which ones are developed?
- On what other fields does this topic base its methods?



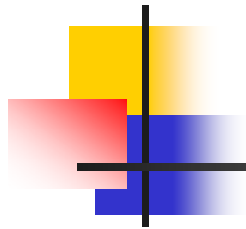
Structure (10 pages total, English)

- Title
- Abstract (200 words)
- The scientific topic (~1 page)
- Problem & Research Challenges (~1 page)
- Tools and Approach (2 pages)
- **Classification** (1 pages)
- Representative Papers (4-5 pages)
- Conclusions (0.5 pages)



Putting the reader first

- **Do not** recapitulate your personal journey of discovery. This route may be soaked with your blood, but that is not interesting to the reader.



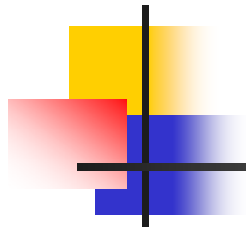
Classification

- Introduce terminology
- Segment the set of papers into clusters that share some characteristic
- Describe what these characteristics are, and how they help to distinguish between different approaches
- How do the different clusters contribute to the research challenges?



Structure (10 pages total, English)

- Title
- Abstract (200 words)
- The scientific topic (~1 page)
- Problem & Research Challenges (~1 page)
- Tools and Approach (2 pages)
- Classification (1 pages)
- **Representative Papers** (4-5 pages)
- Conclusions (0.5 pages)



The papers

Decide what are you going to tell about each paper:

Which one of the 3-4 research directions do they belong to?

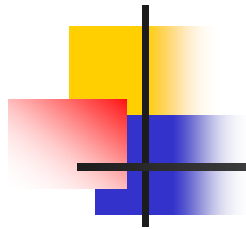
What techniques do they rely on?

Is it a theory, evaluation or application paper?

Is it a continuation of some other work?

Why is it important?

To what other work does this paper relate to?



The papers

Overview:

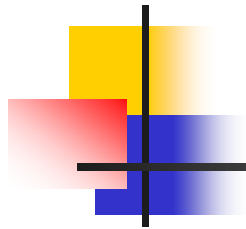
In addition to describing the papers:

Produce a table that compares the different papers you have reviewed according to your classification and to their characteristics



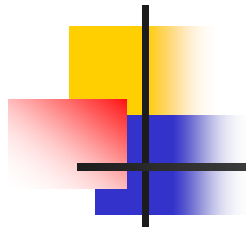
Structure (6 pages total, English)

- Title
- Abstract (4 sentences)
- Introduction (0.5-1 page)
- The problem (0.5-1 page)
- My idea (0.5-1 pages)
- The details (2 pages)
- Related work (1-2 pages)
- **Conclusions** (0.5 pages)



Conclusions

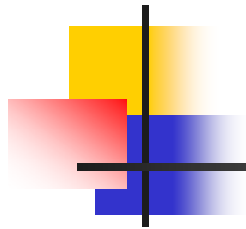
- Be brief.
- Relate this topic to other topics
(e.g. How it contributes to other topics,
what new insights does it produce, etc)



Summary

If you remember nothing else:

- Introduce a scientific topic
- Explain why it is important
- Present and structure a set of papers that fall into this topic



Folien

- <http://kmi.tugraz.at/blogs/vwa10/>

- Gruppe: **Markus Strohmaier**
 - (a) OOP & FP (Neuper): Schulhofer, Steger, Schafhauser
 - (b) Topic Modelling: Aigner, Grubinger, Maderer
 - (c) Search & Ranking in Twitter: Kendler, Maier
- 1. Besprechungstermin
 - Di, 2. Nov, 13:30 (b: confirmed), 14:00 (c: confirmed)