Formal Methods Seminar

2023WS, SE 181.221

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Seminar Information

- **Goal:**
  Learn how to understand and present research results in the area of formal methods.

- Seminar webpage on TISS – check it for updates

Seminar Organization

- October 23, 2:15pm, FM Seminar:
  - Overview;
  - Proposed papers are listed online;
  - Guidelines on giving talks
- November 6:
  - Student's deadline for choosing a paper (decision to be mailed to L. Kovács);
  - Paper assignments will be published online;
- November 2024:
  - Contact lecturer and read assigned paper;
- December 4-15:
  - **Mandatory meeting 1:** discussion of the paper and its draft presentation;
- January 15-19:
  - **Mandatory meeting 2:** discussion of the paper and its presentation;
- January 25-31 – exact dates TBD:
  - **Final presentation,** attendance required, Q&A encouraged

Seminar Requirements

- Read and understand the research paper, including related works.
  - Impact, significance and originality of results
  - In-depth presentation of technical contributions
  - Relation and improvements on the state-of-the-art
- Two mandatory meetings with lecturers to discuss the paper and its presentation draft;
- Oral presentation on the assigned research paper:
  - 1/4 of the presentation: popular-science style talk on the importance and impact of the papers on society and research community;
  - 3/4 of the presentation: scientific talk on the technical contributions of the papers
- Active participation during the oral presentations.

Guidelines on

How to give the FM Seminar Talk

How to Give the FM Seminar Talk?
- Structure of the Talk
- Formatting Guidelines
- Giving a Talk

Guidelines for Preparing the Talk

Part 1: Popular-science style talk

Part II: Scientific talk

Guidelines for Preparing the Talk

Part 1: Popular-science style talk

- Highlight the relevance: impact on society and scientific community;
- Clarify the goal: present the topic in general;
- Think of the audience!
  (professional background, age, not much formal methods/math expertise, etc.)
  - Does not know the specific research topic;
  - Knows very little about computers, likely nothing about computer science;
- Underline general advantages/disadvantages.

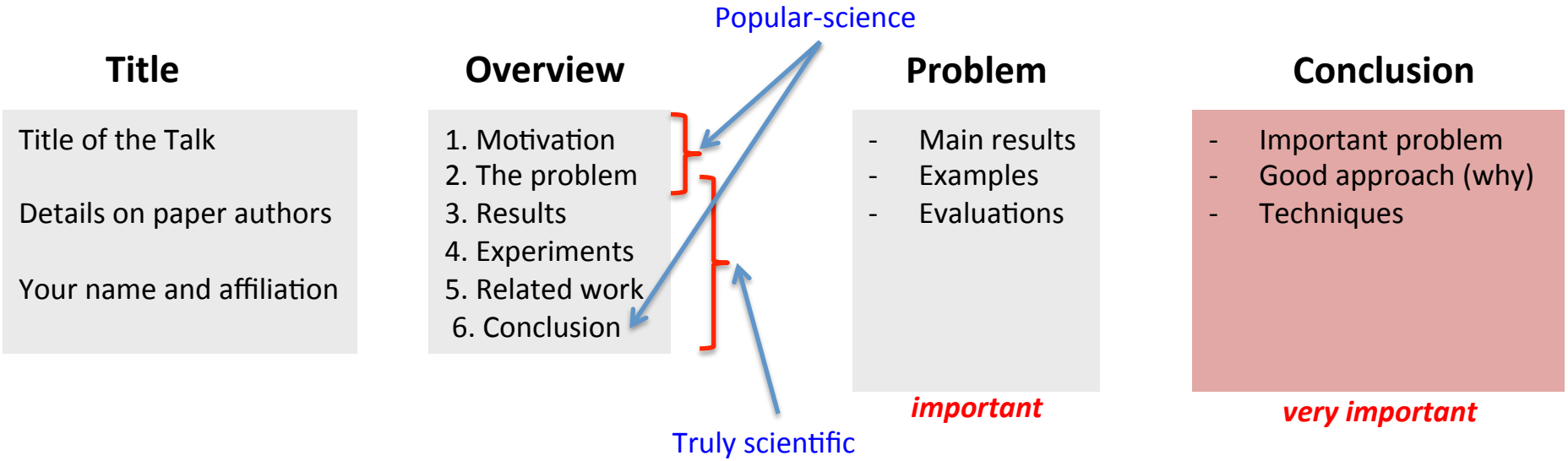
Guidelines for Preparing the Talk

Part II: Scientific talk

- Clarify the results: list the main research results;
- Think of the audience!
  (professional background, age, formal methods/math expertise, etc.)
  - Knows foundation of computer science;
  - Does not know the specific research topic;
- Focus on concepts, not details;

  but master the details, if asked!
- Underline scientific advantages/disadvantages.

Structure of the Talk



Colors

- Avoid too many colors;
- Background colors:

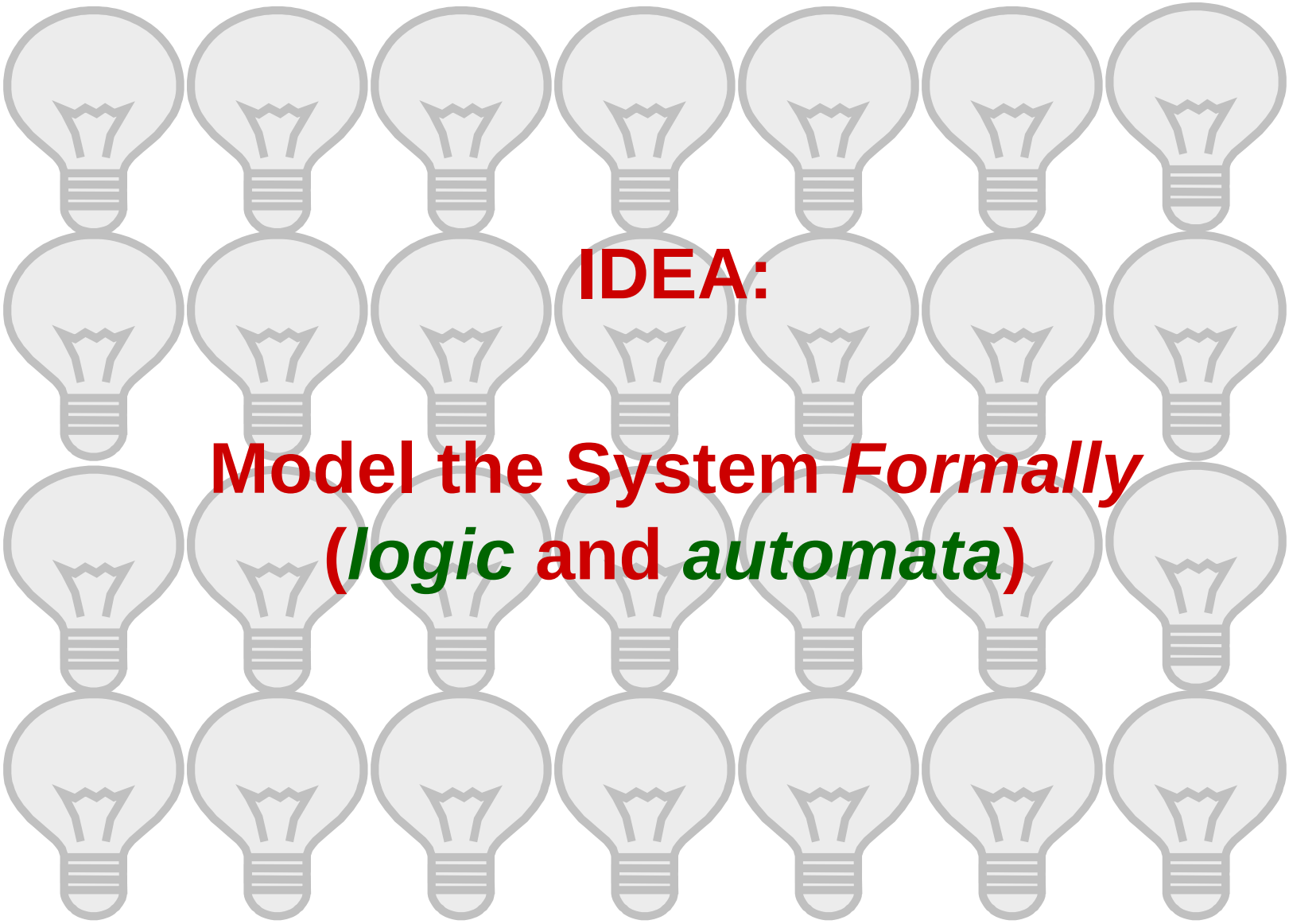
  Yellow, **Orange,** **Green,** **Light blue**

- Text colors:

  Dark Blue, **Magenta**, **Red**, **Dark Green**, **Fuchsia**

- Avoid distracting backgrounds! Why?–see next slides!

Distracting Background



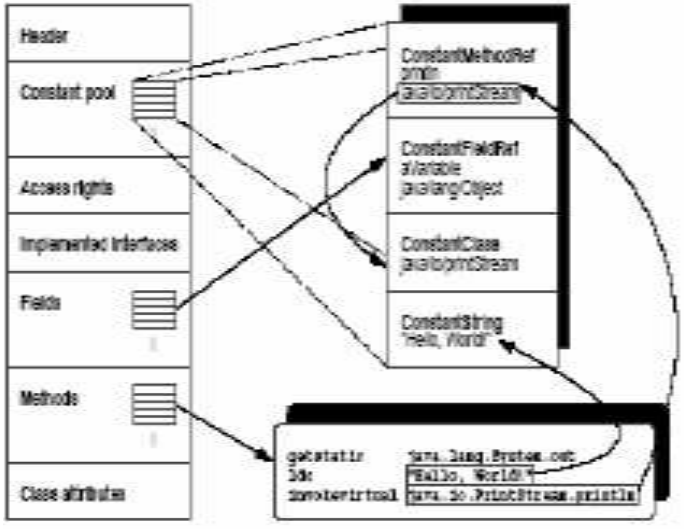
IDEA:

Model the System *Formally*
(*logic* and *automata*)

Slide Layout

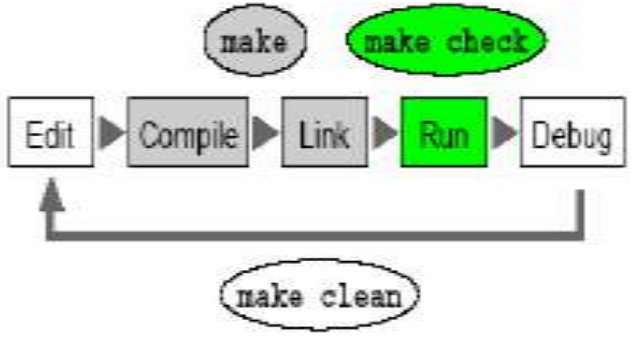
- Do not overload slides;
- Use little text, keep text in one line;
- Use diagrams and flowcharts;
- Keep as simple as possible and as complicated as necessary!

Diagrams




```
private static Method helloifyMethod(Method m) {
  /* Create instruction list to be
     inserted at method start.
   */
  String msg = "Hello, World!";
  InstructionList patch  = new InstructionList();
  patch.append(new GETSTATIC(out));
  patch.append(new PUSH(cp, msg));
  patch.append(new INVOKEVIRTUAL(println));
  MethodGen          mg  =
    new MethodGen(m, class_name, cp);
  InstructionList    il  =
    mg.getInstructionList();
  InstructionHandle[] ihs =
    il.getInstructionHandles();
  il.insert(ihs[0], patch);
  m = mg.getMethod();

  return m;
}
```



What about the people in the back row?!

Formulas

- Use only when needed, do not overload;
- Use descriptive variable names:

$$v = \frac{d}{t} \quad \rightarrow \quad velocity = \frac{distance}{time}$$

- Consider Powerpoint's equation editor vs LaTeX

Guidelines for Giving the Talk

Contact with the Audience

- Establish contact between yourself and the audience;
- Look at the audience (and not to the walls);
- Devote your attention to the entire audience, not just one person;
- Do not speak with slides / beamer / blackboards!

  Speak to the audience!

Guidelines for Giving the Talk

Presenting Slides

- Dedicate at least two minutes per slide;

  $\leftarrow$ Cut the number of slides if time is not enough;

- Keep introduction and motivation short;

- Do not spend too much time on the talk's outline

- Allow more time for complex topics:

  - Repeat if really important;
  - Use examples (a running example/more examples)!

Guidelines for Giving the Talk

Before Starting Your Talk

- Check whether the beamer is all right (wrt your presentation);
- You and/or beamer should not hide projected slides.