Research Methodology
Intruductions and Related Work

Lecture, 7. September 2007

Structure of Paper

- Title: "Catchy summary of paper content"
- Abstract: "Why should you read our paper"
- **Introduction: "What we will tell you"**
- Contribution (Main Part): "What we did"
  - Hypothesis, method, evaluation, results
- **Related Work: "The context and why new"**
- Conclusion: "What we told you"
  - Somtimes also: Discussion, future work
- References: "Where to find context, etc"

Introduction

- "Bad beginning makes a bad ending"
  - Euripides
- Introduction key to paper
  - Often determines fate of paper
  - Often the only part that is read
    - Aside from vanity search in references and acknowledgements
  - Should give idea, but not technical detail

Content of Introduction

- Nature and scope of problem
- Context of problem being addressed
- Context of existing solutions
- What is achieved in this paper
- Overview of rest of paper

- Compelling ("driving") example GOOD

Related Work

- Purpose
  - Put work in context of existing science
  - Show your work goes beyond current work
  - Establish your knowledge of field

- Placement
  - In introduction
  - After introduction
  - After contribution

Content of related work section

- What has been done in this area
  - As far as relevant to your work

- Why does existing work not suffice
  - Identify shortcomings or lack of solutions

- Remember the audience
  - "Relevant" work differs by fields
  - Example: AI versus Space

Presentation of Related Work

- Best if short, interesting and complete
  - Fits nicely into introduction or right after
  - Can be part of story of motivation, etc.

- May need to be longer
  - In active areas, a lot may be going on
  - May fit better after contribution

What Related Work?

- Selection requirements
  - "Complete" overview
    - Reference by chaining is usually okay
    - Example: "In a recent overview of heuristic search, it is noted that simple plangraph heuristics cannot handle the interactions in our example problem."
  - Depends on audience
    - Can assume "baseline knowledge"

What Related Work?

- Selection process
  - List every relevant technology or paper
  - Sort and filter list
  - Identify suitable references for each
  - Construct arguments/summary of each
  - Assemble into a story

Common mistakes

- Write everything the author knows
- Cover only the most general abstraction
- Unstructured presentation
- Paper on the history of the solution
- Hide core problem by redefining things
- Use "it", "that" and more
- Overly complex sentences
- Mix of mathematical logic and words