

# Technical Writing

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# Analyze your Audience

- Expert
- Technician
- Manager/boss
- General reader

# Purpose of Document

- Persuade
- Report
- Instruction manual

# Types of Documents

- Papers
- Proposals
- Theses
- Reports

# First Write a Broad Outline

- Introduction
- Literature review
- Proposed methods
- Results
- Conclusions

# Next Refine your Outline as much as Possible - Introduction

- Introduction
  - Problem statement
  - Importance of application (big picture)
  - Brief literature review with explanation why your method is better
  - Overview of proposed methods
  - State contribution
  - Outline of paper

# Next Refine your Outline as much as Possible – Lit Review

- Single robot path planning
  - Navigation
  - Coverage
    - Offline
    - Online
- Multi Agent Systems
- Multi-robot path planning
  - ...

# Proposed Methods

- This is the MOST important section to present well.
- Minimize words, maximize equations, algorithms, flow charts, block diagrams.
- Words should be used to support figures and equations.
- Every term in every equation must be defined somewhere



# Results

- Resist the temptation to show too many results, just choose the best
- Every figure must be referenced in text
- I also like to provide a nice long caption that may duplicate what is explained in the text (if space permits)

# Conclusion

- Reverse of introduction
- Restate contribution
- Can restate most convincing results
- There should be NO new information here

# Other Common Mistakes

- Verb tense should be consistent (with certain exceptions)
  - E.g. Robotics is an emerging field. In 2002, 8000 Predators were deploying in Afghanistan.
- Be careful with pluralities and possessives.
  - E.g. The robots' laser scanners
- No first person
  - I conducted an experiment -> An experiment was conducted
- Reduce use of i.e. E.g. Etc. There is always a better way
- KEEP SENTENCE STRUCTURE SIMPLE!

# Revision

- Hot revision
  - Done immediately after writing draft
  - Used to find conceptual problems
- Cold revision
  - Done at least 2 days after draft is written
  - Used to find written language errors

# What is wrong with these sentences?

- Wheelchairs are an essential device for people with disabilities that reduce their mobility

# What is wrong with these sentences?

- For example, if a wheelchair could detect obstacles, record and remember different environments, or cooperate with other wheelchairs, the workload of nurses could be reduced, and patients will be happy to have increased independence.

# What is wrong with these sentences?

- The system will be built using the behaviour based approach proposed by Rodney Brooks[13] where each task is assigned a priority and an arbiter decides on the most viable behaviour. Commonly used in ground robotics to fuse obstacle avoidance and goal oriented algorithms.

# What is wrong with these sentences?

- The military benefits are tremendous with the already large amount of unmanned drones in the air additional autonomy would allow for shorter training times, lower operator load and increased reliability.