

Research Talk

Part 1

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Discussion Topics

1. How to write a scientific paper
2. Further research directions
3. Comments and Suggestions

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How to Write a Scientific Paper Best Practices and Guidelines

Good Scientific Writing is Important

- Clear communication of research findings
- Enhanced impact, visibility, and citations
- Essential for peer review and publishing
- Professional recognition and career development

Structure of a Scientific Paper

- Abstract
- Introduction
- Methodology
 - Test Case Presentation (real or simulated)
- Results
- Discussion
- Conclusions
- References

How to Write an Effective Abstract

- **Clearly state**

- Research objective (why?)
- Methodology (how?)
- Key results (what did you find?)
- Main conclusions (what does it mean?)

- **Tips**

- Keep concise (typically 150–250 words)
- Avoid references, figures, and acronyms
- Write the abstract last

Writing The Introduction

- **Define the problem clearly:**
 - Describe background and context
 - Review relevant literature concisely
- **Motivate your research clearly:**
 - Identify research gaps
 - Explain the novelty and significance of your work
- **Clearly state your research objectives or questions**

Writing a Clear Methodology

- **Explain what you did, how you did it, and why**
- **Describe:**
 - Materials, experimental setup, data collection
 - Methods and procedures (clearly and precisely)
 - Ensure your methodology is reproducible
- **Common pitfalls to avoid:**
 - Missing details or ambiguous descriptions
 - Unnecessary complexity

Presenting Results Clearly

- **Summarise your key findings clearly and objectively**
- Use tables and figures effectively:
 - Clear and self-explanatory captions
 - Ensure readability (font size, colour, clarity)
 - Clearly label axes and legends
- Highlight important trends or relationships clearly
- Avoid discussing or interpreting results here

Discussion and Conclusions

- **Discussion:**

- Interpret the significance of your results
- Link your results clearly back to your research questions
- Explain how your results relate to existing research

- **Conclusions:**

- Summarise the key outcomes clearly
- Suggest future research directions or implications

- **Important:**

- Avoid introducing new data here

Writing Style for Scientific Papers

- **Use clear, precise, concise language:**
 - Avoid ambiguity, unnecessary jargon, and complexity
- **Be consistent:**
 - Acronyms clearly defined at first use
 - Use past tense for methodology and results
 - Present tense for established facts and general statements
- **Use a formal but straightforward style to improve readability**

Effective Reference Management

- Carefully choose relevant and reliable sources
- Consistently follow a standard referencing style (IEEE, APA, etc.)
- **Use reference management software effectively:**
- **Examples:**
 - LaTeX with IEEE or Elsevier
 - Helps maintain consistency and accuracy
 - Makes citation and bibliography management easy

Common Mistakes in Scientific Writing

- Poor structure and unclear logical flow
- Missing key methodological details
- Overly complicated or verbose writing
- Misuse or overuse of acronyms and jargon (too technical)
- Inconsistent referencing and formatting
- Tips for avoiding these pitfalls clearly outlined

Final Checklist Before Submission

- Ensure logical coherence (introduction → conclusions)
- Verify accuracy and clarity of results, tables, and figures
- Check grammar, spelling, and consistency of style
- Verify correct referencing and citation style
- Confirm compliance with journal or conference requirements

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Future Research Directions

Explainable and Interpretable Machine Learning

- **Goal:**

- Develop Machine Learning (ML) models that clearly explain diagnostic decisions

- **Approaches:**

- Black-box models
- Integration of fuzzy logic and ML

Thanks for Listening!

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**From you all:
Comments and Suggestions**

*Please feel free to contact me via email
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you need help or have suggestions and
recommendations regarding your thoughts and work*