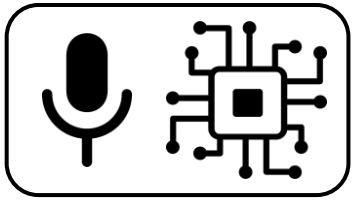
Computational Analysis of Sound and Music

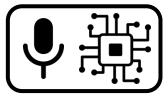


Research Project – Scientific Writing

Dr.-Ing. Jakob Abeßer

Fraunhofer IDMT

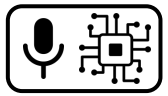
jakob.abesser@idmt.fraunhofer.de



Scientific Writing

Introduction

- Scientific writing is a crucial skill for researchers to effectively **communicate their work**
- Well-written papers enhance the **credibility** and the **impact** of research
- Researchers are **evaluated** based on writing output (number of publications, publication type, journal rank etc.)
- Papers follow a common **structure** that helps readers navigate the paper and understand its contents efficiently.
- Scientific writing is a **skill** which takes years of practice

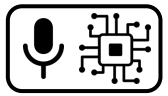


Scientific Writing

Title / Abstract

- Title
  - The title should be **concise** and informative, accurately reflecting the content of the paper.
  - As **short** as possible, as long as necessary
  - Use **relevant keywords** that capture the essence of your study, which also helps in search engine optimization.

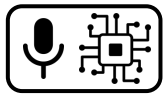
- Abstract
  - Brief summary of the paper, including its objectives, methods, results, and conclusions
  - Rule-of-thumb: one sentence per section



Scientific Writing

Introduction

- Introducing context / background of research (e.g. overarching research field)
- Introduce and motivate research problem/objective (why is it interesting / useful?), possible application scenarios
- Mention challenges (why is it hard?)
- Summarize main contribution(s) – summarize significance of the publication
- Optional: brief overview over paper structure



Scientific Writing

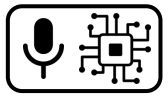
Related Work

- **Compare**: provide overview over (relevant) related work
    - Summarize main findings
    - Group references based on similar methodologies, theories, or findings.
- **Contrast**: Highlight how your research differs from the existing literature
    - e.g.: different methodologies, new data, alternative interpretations, or addressing gaps)
- State how your research adds to the existing body of knowledge
    - new insights, extending current understanding, or refining existing models or theories

Scientific Writing

Methodology

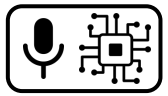
- Describe the methods and techniques used to conduct the research
    - Add references for established methods
    - Possible use of equations, flowcharts, figures
- Possible subsections
    - Feature extraction
    - Neural Network Architecture



Scientific Writing

Evaluation & Results

- Describe experimental design
    - Hyperparameter configurations which are evaluated
    - Baseline system
    - Evaluation metrics
    - Dataset(s) (possible subsection)
- Summarize results
    - Use tables, figures, and graphs to illustrate key findings and trends



Scientific Writing

Conclusion

- Repeat main research objectives
- Summarize the key findings of the study and their significance.
- Interpret the results and places them in the broader context of existing knowledge
- May propose recommendations for further research or practice.