EEE 6108 Engineering Research Methodology.

25th June, 2019

Course Content

1. Problem identification
2. Literature review
3. Proposal writing
4. Data analysis and visualisation
5. Research software development
6. Reproducibility
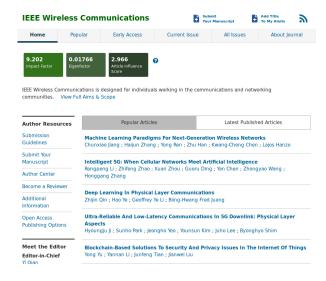7. Ethics

Today's Lecture

1. Anatomy of A proposal

Problem Identification

- A good proposal starts with a good problem
- Solution to real world problems
- Advancing the state of the art
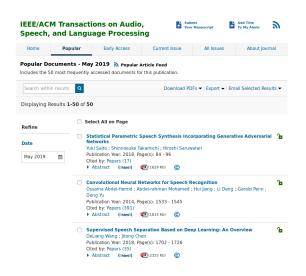
Problem Identification

- Familiarity with the literature
- Know the key publications in your area
- Both technical journals and magazines
  - IEEE Transactions on Signal Processing
  - IEEE Signal Processing Magazine
  - IEEE Wireless Communications

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☐ **Statistical Parametric Speech Synthesis Incorporating Generative Adversarial Networks**
Yuki Saito ; Shinnosuke Takamichi ; Hiroshi Saruwatari
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Ossama Abdel-Hamid ; Abdel-rahman Mohamed ; Hui Jiang ; Li Deng ; Gerald Penn ; Dong Yu
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☐ **Supervised Speech Separation Based on Deep Learning: An Overview**
DeLiang Wang ; Jitong Chen
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Proposal Writing - Title

- The title sets the first impression
- Should be descriptive, specific and convey the importance of the work

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http://researchfund.go.ke/wp-content/uploads/2017/04/
SHORTLISTED-MASTERS-PROPOSALS-2016-2017FY.pdf
```

Abstract

- Arguably the most important
- Written last
- Include hypothesis tested, objectives, approaches, research plan and significance
- What is unique?

The Body - General Comments

- Keep it focussed
- Show the novelty/innovation
- Ensure it is feasible
- Use figures where they help provide a succinct description

Background

- What is known, what is unknown, why it matters.
- Critically evaluate the relavant literature
- Clearly identify the gaps you will address

Research Design and Methods

- How will you achieve your aims
- What will you do if things don't work out

Reading Habits

- 10 simple rules
  `https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1006467`
- What will you do if things don't work out

Example Proposal

```
https://github.com/OpenDreamKit/OpenDreamKit/blob/
master/Proposal/proposal-www.pdf
```