XPE045SCWR: SCIENTIFIC WRITING COURSE
Summer 2019

Chang-hee Won, PhD
Michael Ynsua

Czech Technical University

My Background

- PhD (4.5 yrs): assisted initially then wrote journal papers. Dissertation.

- Industry, ETRI (5 yrs): design documents, report writing

- Faculty (18 yrs): conference (3-5/yr) and journal papers (1-2/yr)

- Proposal writer and reviewer NSF, NIH (18 years)

- IEEE Sensors Journal Associate Editor

- At CVUT (6 mo): Fulbright Fellow - Department of Cybernetics in Karvolo namesti campus

Your Background

- Where are you at CVUT?

- Department, advisor, area of interest, etc.

Syllabus

- Course objective: help researchers organize and effectively communicate, in English, their scientific results

- IEEE How to write for technical periodicals & conferences

- Will have every other week assignments with a goal that these will lead to a final paper and presentation

- Go over syllabus

- CourseWare: http://cw.fel.cvut.cz/wiki/

Why write a paper?

- To advance progress in the field

- To advance your career

What makes a good paper?

- Is the problem important? Are the data/results of interest to the broader community?

- What has been done in the past?

- Does this research advance the field?

What does that mean?

- Employ existing methods in a new way (minimally novel)

- Compare the performance of existing methods (informative but not novel)

- Extend an existing method (minimally novel)

- Present a new method and showing its benefits over old methods (novel)

- Present an all new problem that shows how existing methods fail (novel)

- Present a new method that solves a new problem using new technology (ultimately novel!)

Paper vs Report

- Report presents results/data based on known methods on a known problem.

- A paper needs to have a novel aspect.

- Just because the work isn't novel, does not mean it's not important.

- Just because the work is novel, does not mean it is important.

- Back to above. What is in your paper should be "important" and "novel"

- "important" and "novel" to who?

When do you write your paper?

- Early and often!

- Once you have some data (see Ripka draft)

- Once you have a topic (see hand notes)

- Writing a paper helps identify "holes" in the research and thus

- Should not be something you do at the end (that would be like a Report). See soil propagation paper.

Structure

- Millions of technical papers have been written and read and a particular structure is expected. Assignment 1 will have you start doing this.

- title & key words

- abstract

- introduction (present problem and prior art)

- methodology

- results/data

- conclusion

- bibliography/references

- paper does not have to be long to have an impact

- throughout the semester we will go into details on each of these components

Peer review process

- How do you know your work is novel and important? It gets reviewed by peers.

- peers? Experts in the field.

- goal: make the work better!

Questions asked in the peer review

- Does work address a new and important problem? (timely/important?)

- Is the work original? (novel?)

- Are methods and rationale valid? (correct?)

- Do conclusions make sense? (correct?)

- Is it clearly written? (presentation?)

- Do illustrations, tables, and charts support text? (presentation?)

- Are references relevant and current? (context?)

- Is content appropriate to interest and level of journal? (context)

What to expect?

- rejection!

- lots of feedback!

- your reply could be longer than manuscript!

- a better manuscript afterwards!

Common Mistakes

- sentences that are too long

- repetition of phrases

- use of absolute terms ('perfect', 'optimal', 'best')

- contractions (dont!)

- overcomplicated nomenclature in equations

- not discussing equations

- inadequate discussion of results

- poorly presented data

- not being clear of importance and/or novelty

Assignment 1

- think about your research problem (thesis)

- download template and start filling in sections

- Write a draft outline of your paper