How to Write a Technical Report

I) General writing points:

- Pay attention to how to communicate effectively.
  - Present the content as structural and logical as possible.
    - Organize the content into chapters/sections and subchapters/subsections properly to improve its perception.
- Provide accurate information.
  - Be clear and concise.
  - Be consistent with notations and format.
- Get to the point.
  - Keep the reader's attention on the main problem.
    - Use the appendix for additional data, if necessary.
- Clearly highlight your contributions.
  - Convey ideas and results in the least possible time and space (illustrate them).
    - Draw the block diagram, flowchart of the proposed method, or give the pseudocode.
- In the text:
  - Avoid writing short paragraphs (in only one sentence).
  - Avoid writing lengthy sentences.
  - Cite and describe all illustrations and formulas coming from other publications.
  - Spell the abbreviation in full when it first appears in the text and include (parenthetically) the abbreviation (*e.g.*, *vector quantization* (VQ)).
  - When a Persian translation of a professional word is used, state the English word in the footnote.
  - Avoid writing English or French words using Persian alphabets (except for names).
  - Avoid putting any space between a word and its subsequent punctuation.
  - Avoid starting a sentence with a digit or a formula (no full stop before formulas).
  - Define all parameters used in the formula.
  - Use (a), (b), … for subfigures.

II) Structural points:

A technical report (thesis, seminar, manuscript) usually consists of the following components:

1. ***Title*** – should be concise and to the point, contain main keywords with less than 10 words or 3 lines. Usually in uppercase and boldface.

2. ***Abstract*** – contains the summary of the paper (usually not more than 250 words) including a brief description of the problem, its importance, assumptions, limitations, related existing work, shortcomings, main proposed solutions, used dataset, and method's superiority. No citation and equation. Almost no abbreviations. All in one paragraph (if possible).

3. ***Keywords*** – selected for computerized search. Contains about 4-6 words (in the order of importance).

4. ***Introduction*** – contains the problem definition, its scientific importance, assumptions, limitations, historical background, and relevance to other areas. Properly describe and reference the related work. Give your description of other algorithms. Briefly describe the proposed solution and how it is different from and superior to existing solutions. The last paragraph contains a summary of the report's structure.

5. ***Proposed Method*** – describes the proposed solution. Start with the block diagram (flowchart) of the method. Highlight your contributions. State the model assumptions, clearly. Use figures and tables to illustrate the performance of the method.

6. ***Experimental Results*** – state resource/dataset characteristics (size, resolution, frame rate, etc.), used computer, and language. The chosen parameter symbols should make sense. Provide a fair and complete performance analysis. Compare the quality and computational complexity of the mentioned methods. Use figures, tables, and charts. Interpret the results and changes in them. For stochastic results, report both the average value (over multiple experiments) and the confidence interval (or standard deviation).

7. *Figures* – place figures immediately after where they are referred to, at the page bottom, top of the next page, or at the end of the report. Some margin should be left on above and below each figure. Figures should be readable without relying on the description in the text. All symbols should be explained in legends. The caption appears *below* and ends with a *point*. Previously published material must be accompanied by written permission from the author and publisher. Figures should be numbered sequentially in Arabic numerals. Figure numbers should not appear inside parentheses.

8. *Tables* – just like the points mentioned for figures. Just, the caption is to be centralized *above* it. All used symbols and units should be described.

9. *Equations* – number consequently in each chapter/section, with the number set flush right and enclosed in parentheses (*e.g*., Eq. (1)). Explain the used parameters.

10. ***Conclusion*** – contains what *you* have proposed and the difficulties. Conclude based on your achieved results. Include the future research direction. Preferably, all in one paragraph.

11. ***Acknowledgement*** – comes before the appendix, if any. It should be unnumbered. Funding information may also be included. For the thesis, it appears before the abstract. Start by mentioning the supervisor, lab members and colleagues, and at last the family members.

12. ***Appendix*** – contains materials deemed inessential to understanding but included for completeness, detailed mathematical proofs, ... Comes before the References. Numerate alphabetically (A.1).

13. ***References*** – use more readily available papers. Information should be complete. Follow the determined standard bibliography format precisely. All should have been cited in the text. It should be unnumbered. Include both basic (even old) and recent work.

14. Additionally, you may have a table of acronyms, symbols, abbreviations, and publications.

Prof. S. Kasaei, Jan. 2015.