General Suggestions on Writing a Technical Paper

1. Writing the Abstract
In general, an abstract for a technical paper should be around 150~200 words. The abstract should clearly state these points:
(a) a very brief (1~2 sentences) introduction on the context of the study;
(b) clearly state the problem investigated in the paper;
(c) outline the method/algorithms proposed in the paper for solving the stated problem;
(d) briefly explain the differences from previous studies (if any), like different context, different algorithms, different optimization objectives, etc.
(e) outline what will be presented in the paper, like algorithms, analysis, numerical results, experimental results, implementation details, surveys, etc.

2. Writing the Introduction Section
The introduction can be considered as an extended version for part (a) of the abstract. This section is commonly used to tell the readers what area you are working on, what kind of applications you are considering, why the area/problem is important, and related information. If this section is too short, then it can be merged with the next section.

3. Writing the Background and Motivation Section
In this section, elaborates upon the topics in Abstract’s part (b) and also any existing approaches (if any) for solving the same problem. To tell the motivation of the study, explain the shortcomings of the existing approaches and then propose the solution/algorithm proposed in the paper.
After stating what is done in this paper, explain what is difference about the new approaches (Abstract Part (d)) and (briefly) why it is better than the existing approaches.
4. Hints on Writing

After you complete a sentence/paragraph or reviewing your paper, ask yourself these questions:

(a) *Is this sentence relevant to the arguments in the paper?*

(Sometimes, we tend to add details just because we know of them rather than due to necessity.)

(b) *Is this paragraph has a well-defined topic/idea?*

(Avoid grouping unrelated sentences into a paragraph.)

(c) *Is this paragraph relates/corresponds to the topic.idea in the previous paragraph?*

(d) Avoid indirect/complex sentence constructions like:

   - Original:  This paper *aims at proposing* a new algorithm …
   - Better:  This paper *proposes* a new algorithm …

   - Original:  This paper’s *main focus would fall* on the solution …
   - Better:  This paper *focuses* on the solution …

(e) Be very specific, like:

   - improve (vague) versus increase/decrease (specific)

(f) Be quantitative rather than qualitative whenever possible.

   - Original:  algorithm A has better performance than algorithm B.
   - Better:  algorithm A outperforms algorithm B by 23%.

(g) A sentence either explains something or argues something. For an argument, it must be convincing by ways of: (i) triviality; (ii) reference to previous works; or (iii) reference to section(s) in the current paper where formal arguments are given. Don’t state something without supporting facts and don’t give over-general comments.

(h) Do not skip over relevant topics not covered in the paper. It is better to state where relevant details could be found or state clearly that the topic is out of the scope of the paper.

   (Reviewers tend to think that you have not studied a problem well if they found something you missed.)

(i) When choosing symbols, use *italic*, lower-case symbols for variables and upper-case symbols for constants.

(j) When structuring the paper, use *at most* three layers’ of headings. Try to keep within two whenever possible. It is better to be flat than deep.
(k) Quote references for all figures and paraphrased texts within the paper. These are acceptable in a survey paper. In a technical paper, a reference with a brief line saying what is being referred should be enough.

(l) All figures and tables must be referenced within the text. The figure and table caption must contain enough information to make it understandable without reading the main text.

(m) All references listed in the bibliography section must also be quoted in the text. Depending on the target publication, the references should be numbered either according to order of appearance in the paper; or according to author last name’s alphabetical order.

(n) Use your word processor’s spell check with caution. The final version should always be read carefully, word-by-word, line-by-line. Same for the word processor’s grammar checker.

(o) Use “we” instead of “I” to refer to yourself, even if you are the only author.

(p) Help the reviewer’s job. States clearly your contributions in the paper’s Introduction section and summarize your paper clearly in the conclusion. Don’t just copy the abstract and paste it into the conclusion section.

(q) The most important thing in deciding your paper’s focus is DEPTH, DEPTH, and DEPTH. Dealing with a focused issue extensively and thoroughly is much better than merely a collection of results/contributions.

(r) It is very common for a reviewer to misunderstand your paper and hence raise wrong questions/criticisms. In any case, it is the author’s responsibility to make it easy for the reader to understand the paper and hence, this situation suggests a revision for clarification is needed.

(s) Reviewers are generally NOT interested in what you know or what you have done. They are only interested in WHAT/HOW you have done that gives better result, and WHY it is better than the other approaches/solutions.

(t) In most cases, different solutions usually have different strengths and weaknesses. Hence when comparing your method to others, be objective and don’t over-generalize the superiority of your method. Otherwise you will very likely get (hostile) criticisms from reviewers in the same area.