Please review other abstracts and transpose meaningful components or information to your own abstract. There are a plethora of sites for abstract information. University site guidelines are most in-depth.

An **abstract** is a brief summary of a research article, thesis, review, conference proceeding or any in-depth analysis of a particular subject or discipline, and is often used to help the reader quickly ascertain the paper's purpose.[1] When used, an abstract always appears at the beginning of a manuscript or typescript, acting as the point-of-entry for any given academic paper or patent application. Abstracting and indexing services for various academic disciplines are aimed at compiling a body of literature for that particular subject. Wikipedia Defintion

Abstracts An abstract is a brief statement that conveys a document's essential information. Abstracts are published in online databases, in conference programs, and at the beginning of articles, reports, or posters. Readers often decide whether or not to read the full document solely on the basis of the abstract. That's why learning to write a good abstract is an essential skill for an academic.

The **informative abstract** is a brief description of a document's contents. It usually summarizes the major sections and points of a paper. If you are writing an abstract of a scientific or technical paper, it typically summarizes the introduction, methods, results, and discussion sections. A good abstract mirrors the original document in its emphasis. If the original includes a lengthy discussion section and a short methods section, the abstract should similarly devote more words to summarizing the discussion and fewer to methodology. The typical length of an informative abstract is 150 to 700 words.

Ex. This study investigated the effectiveness of Calibrated Peer Review (CPR) ™ in a senior-level biochemistry class for improving students' ability to write scientific abstracts. Some students revised scientific abstracts after getting feedback on drafts from CPR; others revised after feedback from a Teaching Assistant. The writing quality of the abstracts composed with feedback from CPR was compared with the writing quality of the abstracts composed with Teaching Assistant-generated feedback. Statistical analyses of three assignments by 50 students indicated significant differences between CPR and Teaching Assistant feedback on student writing quality. While scores of students who received Teaching Assistant feedback decreased, scores of students who used CPR improved. Students also progressed over the course of a semester in CPR-generated measures of their reviewing abilities.

The **descriptive abstract** reviews a paper's contents but does not summarize everything it contains. It acts as a guide or a teaser rather than a summary of findings and conclusions. The goals of a descriptive abstract are to inform readers of the subject/topic of a paper and encourage them to read the full paper for main points and conclusions. It explains the paper's purpose and scope but does not give the results or major conclusions. Typically, a descriptive abstract is shorter than an informative abstract and may be only 75 to 100 words.

Ex. This study investigated the effectiveness of Calibrated Peer Review (CPR) ™ in a senior-level biochemistry class for improving students' ability to write scientific abstracts. The CPR process for feedback was compared with Teaching Assistant-generated feedback. Statistical analyses of three assignments by 50 students and a separate analysis of the abstract written by 256 students were used to measure differences in writing quality for each type of feedback.

Remember to include complete citations for all material quoted or referenced in an abstract. Both the abstracts in the example above are based on: "Development of Student Writing in Biochemistry Using Calibrated Peer Review," by Yasha Hartberg, Adelet Baris Gunersel, Nancy Simpson and Valerie Balester, Journal of the Scholarship of Teaching and Learning. 2008.

Abstract Style An abstract should be concise, direct, and clear while including all necessary information.

State your point once in a straightforward manner and move on.Format your abstract into clear, distinct paragraphs—although, often, only one is needed. Follow a logical order that mirrors your original paper.

Include only information or ideas found in your essay. Don't introduce new information.
Remove unnecessary adjectives (such as "very") and unnecessary phrases (like "due to the fact that").
Write in full sentences. It's tempting to save words by omitting nouns (Ex. "Found that dolphins communicate through movement") but you should stick to full sentences (Ex. "Researchers found that dolphins communicate through movement").

How to Write an Abstract Philip Koopman, Carnegie Mellon University October, 1997

Abstract Because on-line search databases typically contain only abstracts, it is vital to write a complete but concise description of your work to entice potential readers into obtaining a copy of the full paper. This article describes how to write a good computer architecture abstract for both conference and journal papers. Writers should follow a checklist consisting of: motivation, problem statement, approach, results, and conclusions. Following this checklist should increase the chance of people taking the time to obtain and read your complete paper.

Introduction Now that the use of on-line publication databases is prevalent, writing a really good abstract has become even more important than it was a decade ago. Abstracts have always served the function of "selling" your work. But now, instead of merely convincing the reader to keep reading the rest of the attached paper, an abstract must convince the reader to leave the comfort of an office and go hunt down a copy of the article from a library (or worse, obtain one after a long wait through inter-library loan). In a business context, an "executive summary" is often the *only* piece of a report read by the people who matter; and it should be similar in content if not tone to a journal paper abstract.

Checklist: Parts of an Abstract

Despite the fact that an abstract is quite brief, it must do almost as much work as the multi-page paper that follows it. In a computer architecture paper, this means that it should in most cases include the following sections. Each section is typically a single sentence, although there is room for creativity. In particular, the parts may be merged or spread among a set of sentences. Use the following as a checklist for your next abstract:

Motivation:*Why do we care* about the problem and the results? If the problem isn't obviously "interesting" it might be better to put motivation first; but if your work is incremental progress on a problem that is widely recognized as important, then it is probably better to put the problem statement first to indicate which piece of the larger problem you are breaking off to work on. This section should include the importance of your work, the difficulty of the area, and the impact it might have if successful.
Problem statement: What *problem* are you trying to solve? What is the *scope* of your work (a generalized approach, or for a specific situation)? Be careful not to use too much jargon. In some cases it is appropriate to put the problem statement before the motivation, but usually this only works if most readers already understand why the problem is important.
Approach:*How did you go about solving* or making progress on the problem? Did you use simulation, analytic models, prototype construction, or analysis of field data for an actual product? What was the *extent* of your work (did you look at one application program or a hundred programs in twenty different programming languages?) What important *variables* did you control, ignore, or measure?
Results:*What's the answer?* Specifically, most good computer architecture papers conclude that

something is so many percent faster, cheaper, smaller, or otherwise better than something else. Put the result there, in numbers. Avoid vague, hand-waving results such as "very", "small", or "significant." If you must be vague, you are only given license to do so when you can talk about orders-of-magnitude improvement. There is a tension here in that you should not provide numbers that can be easily misinterpreted, but on the other hand you don't have room for all the caveats.

Conclusions: *What are the implications* of your answer? Is it going to change the world (unlikely), be a significant "win", be a nice hack, or simply serve as a road sign indicating that this path is a waste of time (all of the previous results are useful). Are your results *general*, potentially generalizable, or specific to a particular case?

Other Considerations

An abstract must be a fully self-contained, capsule description of the paper. It can't assume (or attempt to provoke) the reader into flipping through looking for an explanation of what is meant by some vague statement. It must make sense all by itself.:An abstract word limit of 150 to 200 words is common.

Further Reading Michaelson, Herbert, *How to Write & Publish Engineering Papers and Reports*, Oryx Press, 1990. Chapter 6 discusses abstracts. Cremmins, Edward, *The Art of Abstracting 2nd Edition*, Info Resources Press, April 1996. This is an entire book about abstracting, written primarily for professional abstractors.