The Masters Project Dissertation

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Abstract

A good dissertation of a masters project at UCSC is important because it is a compulsory component to pass your project. In this document we give a guideline that students can use to compile good dissertations. It details the required format and the structure of the dissertations along with some hints of recommended academic writing.

1 Introduction

The dissertation is a formal report of your project work. The readers of your dissertation would be your examiners and any interested future researchers/users. Thus the content of your dissertation and your writing should be directed towards them.

You are required to submit your dissertations at two instances. First, two copies of the *final dissertation* should be submitted. This dissertation would be evaluated by a panel of examiners and marks will be given for it. Also, feedback on it would be given to the student after the student sits the project defense. Then, secondly, two copies of the *hardbound dissertation* that incorporates the examiner feedback should be submitted. Note again that the **final dissertation** is the one that will be given marks while the hardbound dissertations are need for library and the student copies.

The rest of this document is organized as follows. In the Section 2 we give the required content of the dissertation. In Section 3, we give some guidelines on academic writing.

2 The Content

2.1 Structure

Title Page

The title page (only required in the hardbound dissertation) should include the university crest, the full title of the dissertation, the authors name, the degree for which the dissertation is submitted, the full name of UCSC and the year of submission. (The template of a title page is also down-loadable from the PGLMS.)

Declaration

The dissertation must contain the following signed and dated statement of originality and conformity by the candidate:

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The dissertation is my original work and has not been submitted
previously for a degree at this or any other university/institute.
To the best of my knowledge it does not contain any material
published or written by another person, except as acknowledged in
the text.

Students name: ...............                    Date: .........
Signature: .................
```

The following certification should be added **after** the above declaration **only in the hardbound dissertation**.

```
This is to certify that this dissertation is based on the work of
Mr./Mrs./Ms ......... under  my/our supervision. The dissertation
has been prepared according to the format stipulated and is of
acceptable standard.

Certified by:

Supervisor 1  name: ...............                Date: ..........
Signature: .................

Supervisor 2  name: ...............                Date: ..........
Signature: .................
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Abstract

The abstract should be a concise description of the problem addressed in the project work, the method of solution, the results, and conclusions. The abstract should not exceed one paragraph.

The abstract should help a prospective reader decide whether to read the entire dissertation or not. The abstract may be the only available part of your dissertation that the readers can obtain via electronic literature searches or through published abstracts. Therefore, enough key information must be included to make the abstract useful to someone who may to reference your work.

When writing the abstract use the active voice when possible, but much of it may require passive constructions.

The abstract is only text. It should not contain:

lengthy background information,

references to other literature,

elliptical (i.e., ending with ...) or incomplete sentences,

abbreviations or terms that may be confusing to readers,

any sort of illustration, figure, or table, or references to them.

The following is an excellent sample abstract [1]:

In this paper an attempt is made to explore the logical foundations of computer programming by use of techniques which were first applied in the study of geometry and have later been extended to other branches of mathematics. This involves the elucidation of sets of axioms and rules of inference which can be used in proofs of the properties of computer programs. Examples are given of such axioms and rules, and a formal proof of a simple theorem is displayed. Finally, it is argued that important advantages, both theoretical and practical, may follow from a pursuance of these topics.

Table of Contents

A table of contents, with page references, should be provided with sufficient detail to allow ready access to the contents of the dissertation.

List of Figures

A list containing the figure numbers, titles of the figures provided in the dissertation, along with the relevant page numbers should be given.

List of Tables

A list containing the table numbers, titles of the tables provided in the dissertation, along with the relevant page numbers should be given.

List of Abbreviations

If abbreviations are used in the dissertation, their list should be provided.

Acknowledgements

It is expected of the candidate to acknowledge all persons and organizations who facilitated the work described in the dissertation.

Chapter1. Introduction

The introduction should intrigue the reader and cause him to want to read on. Firstly, the motivation for the project should be argued. Then a brief introduction to the project should be provided indicating its objectives and scope. Finally, a paragraph containing an outline of the remaining chapters (starting with Chapter 2) could be given. Without simply listing the topics, this outline could give a little more information about the contents of each chapter.

Chapter 2. Background

The content of this chapter should be based on the type of the project: **research** or **implementation**.

For a research type project: A literature review. In this chapter a review of work that is related to your project should be provided in the form of an up-to-date and comprehensive review of relevant literature. A good literature survey should demonstrate your awareness and understanding of the background literature to your topic. It should begin by setting the proposed work in a wide context, and progress to a more detailed account of the most relevant work in the area, taking care to include all up-to-date references. Reviewing the literature can help to identify questions and issues that have not yet been answered, ideally questions that will be addressed through your project.

Your sources of literature should typically be the primary research journals - the journals that publish original research articles (e.g., ACM, IEEE). Other reputed sources (e.g., citeseer) are also acceptable. Although you may

read some general background references (encyclopedias, textbooks, etc.,) to get yourself acquainted with the subject area, do not cite these, because they contain information that is considered fundamental knowledge within the discipline. Cite, instead, articles that reported specific results relevant to your study. The articles listed in the "References" section of relevant papers are a good starting point to move backwards in a line of inquiry. You may also use a *citation index* which is useful for tracking a line of inquiry forward in time. Also note that only references that are directly relevant to the project work should be reviewed.

The review should be organized and structured in a meaningful way, and the themes and relationships between the references identified. You should identify general trends and positions in the research area, and the papers cited should be compared and contrasted. It may also be appropriate to incorporate criticisms of previous work where appropriate (and to justify the criticisms). A good literature review will also help you identify the ideas from the literature that are useful and can be applied to your project and those that are not.

Note that everything used should be cited by reference to the "References" section at the end of the dissertation.

For an Implementation type project: An implementation type project dissertation could contain one or more of the following in its Chapter 2:

An analysis. An analysis of the requirements could be provided in this chapter. For example the requirements of the system could be listed. Information on the existing system could be provided through appropriate structures like *Data Flow Diagrams* (DFD) if applicable. The logic inside *processes* in a DFD could be given for example through *structured English*, *decision tables*, or *decision trees* (whichever is appropriate). Data modelling (if appropriate) could be done through *ER diagrams*. *Functional Hierarchy Diagrams*[2] [1] can also be used if appropriate. *Use case diagrams* could also be used if applicable. (**Note**: The above is just a guideline of the different items that could be provided in your dissertation. From that list, you should pick **only what is appropriate** for your project. You should also be judicious in picking the **right** amount of detail that your reader will appreciate and should not have pages and pages of a particular diagram type in your dissertation.)

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[1]Functional hierarchy diagrams could be drawn by listing the tasks that each user would like to perform using your system.

A review of similar systems. You may also review existing software that are similar to your proposed system. Your review must be comprehensive and up-to-date. It may be appropriate to incorporate criticisms of these systems where needed (and to justify the criticisms). This review will also help you identify the ideas from these software that are useful and can be applied to your project and those that are not. Also note that everything used should be cited by reference to the "References" section at the end of the dissertation.

A comparison of alternative design strategies. You should also consider different competing design strategies for your system. The different strategies may involve the way of development (developing from scratch, using open-source components,etc.,), the hardware environment (stand alone personal computer, client-server environment, etc.,), choice of system software (Windows, Linux, etc.,). You could compare how the project requirements are satisfied through each alternative as well as the costs involved in each ([2] table 11.45) and select with justification a single design strategy for implementation.

Chapter 3. Methodology

For a research type project: This could be considered the most important chapter for a research type project as this is where your research contribution to the world is presented.

The design of your solution could be described in this chapter. Ideally, there should be evidence of a methodical approach. It will be beneficial to discuss alternate solutions (e.g., methods, algorithms, data structures, etc.,) if applicable, and the one selected by you should be explained and justified. Coherent and logical arguments are encouraged with respect to the selection. To describe your design, you may use appropriate mechanisms like for example pseudo codes, suitable diagrams etc.

Your implementation environment (hardware/software), any tools, any existing software that you re-used, etc., should also be given in this chapter. You could also identify and explain all major code and module structures in your code and also identify any platform dependencies. When re-using existing code, your contribution in the implementation must be closely indicated, and the original authors/sources must be appropriately acknowledged (through entries in your "references" chapter).

For an implementation type project: The design of your system should be given in this chapter. The structure of the system should be clear to the

reader after reading this chapter.

In this chapter, you may provide for example *database table structures, file organization type, backup strategy design, design of any audit trails, security scheme design, structure charts, important pseudo codes, class diagrams (for OO design), state diagrams (for OO design), sequence diagrams (for OO design), test plan, etc.,* (**whichever is appropriate for your project**).

As for a research type project, your implementation environment (hardware/software), any tools, any existing software that you re-used, etc., should also be given in this chapter. You could also identify and explain all major code and module structures in your code and also identify any platform dependencies. When re-using existing code, your contribution in the implementation must be closely indicated, and the original authors/sources must be appropriately acknowledged (through entries in your "references" chapter).

Chapter 4. Evaluation

For a research type project: In a research type project, this chapter should give the results of the work. Your results could be given in the form of tables or graphs (if applicable) so that the reader can easily compare your work with other approaches.

This chapter should also provide a critical discussion evaluating the results. In the discussion, you may point out both the positive and the negative aspects of your work.

You should also provide well thought out details of any future work that future researchers can work on.

For an implementation type project: In an implementation type project, this chapter should give a critical evaluation of the system. It should discuss whether the project objectives were satisfied and if not, the reasons for them. Lessons learnt during the course of the project should also be expanded upon. It is important that any failures to achieve given objectives should be discussed and analyzed (this does not mean that the candidate will be penalized). Problems beyond the control of the candidate (e.g., client requests, obtaining necessary hardware/software, etc.,) that have affected the progress of the work may be mentioned here. However, it is important to leave your reader with a good impression of the work. Therefore be positive and upbeat, even if the candidate feels that he has had a tough time.

Ideally you should say in writing that all aspects of the system have been tested and specification has been met. The evaluation of your developed system by potential users (through their feedback after using your system) may also be provided here. Any documents related to client's evaluation of

your system (if applicable) and also a *client certification letter* indicating the level of achievement of the set objectives and usefulness of the system (also if applicable) should be provided in the Appendix.

This chapter should also identify any deficiencies in the final product (if applicable) and highlight how improvements could be made through future work.

Appendices

Detailed information or data which may increase the usefulness of the dissertation for examiners and subsequent readers, **but which are too detailed** for inclusion in the main body of the dissertation may be included as appendices. Appendices must meet standards with respect to margins and be formatted according to the remainder of the dissertation.

For an implementation type project, it will be beneficial for future readers to include as an appendix a cocise *administration guide* for your system. As mentioned earlier, a client certification letter (if applicable) is also a good item to be included in the appendix.

References

All references cited in the dissertation should appear in the reference list, and all references in the reference list should appear as citations. The referencing should be done in the IEEE format (given in the Appendix of this document).

2.2   Formatting Guidelines

Submissions

Two copies of the *final dissertation* and **two copies** of the *hardbound dissertation* should be submitted to the Examination Division of the UCSC on or before the submission dates given in the PGLMS.

The students doing a group project also will have to submit a single submission for the entire group (i.e., two final dissertation copies for the group and two hardbound dissertation copies for the group). However, each member should submit an individual report (one page) detailing his/her contribution to the project **only** at the final dissertation submission time.

Cover

The **final** dissertation should be *spiral bound*.

The **hardbound** dissertation should (be hardbound as the name implies) with a **dark black cover**. The title, the authors name and the year of submission should appear in the front cover. The title should be based 3cm from the top, in a font size equivalent to 28 of Times New Roman. The authors name with initials and the year of submission should be placed 2cm from the bottom, in a font size of 20. All text should be centered. Gold lettering should be placed in the hard cover. The year of submission, the degree for which the dissertation is submitted, and the name of the author with initials should also be in gold lettering and in a single line on the spine, running lengthwise in that order from the top (templates are available at the PGLMS). The dissertation should be bound with two blank sheets, one each on the inside of front and back cover.

Paper

Each copy of the dissertation shall be on good quality A4-sized clear white paper having at least 80 gsm. One type of paper must be used throughout the dissertation. However, paper of different quality may be used for figures, photographs, maps, etc. Printing should be done on a **single side** of the paper only.

Font

The general text should be in 12 point Times New Roman font size. Chapter headings should be in 16 point size and any other title should be in 14 point size.

Line Spacing

For the **final** dissertation, the typing should be with a line spacing of 1.5 (including the list of references). Candidates may choose an appropriate spacing for the appendices.

For the **hardbound** dissertation the typing should be with a line spacing of 1.

Margins

Top, right and bottom margins should be equivalent to 2 cm. The left margin should be 3 cm.

Pagination

Brevity of your dissertation is important and we believe that the quality of dissertation content to be more important than its number of pages. Therefore you should decide on the most important information (which would benefit your readers) to be provided in your dissertation, **avoiding any unnecessary repetition of detail**.

Pages should be numbered consecutively throughout the dissertation. Preliminary pages (i.e., title page, statement of declaration, abstract, table of contents, list of figures, list of tables, list of abbreviations and acknowledgements) that precede the main text should be numbered with lower case roman numerals beginning with ii for the page that contains the statement of declaration. Number the main text, starting with the "Chapter 1. Introduction, consecutively beginning with the Arabic number one (1). All page numbers should be placed on the top right corner of the page.

Formulae

Formulae (if applicable) should be printed leaving ample space around the formulae. Subscripts and superscripts should be clear. Meanings of all symbols should be given immediately after the equation in which they are first used. Equations should be numbered serially at the right hand side within parentheses.

Tables and Figures

Each table and figure should be consecutively numbered (e.g., Table 1.1, Table 1.2, Fig. 1.1, Fig. 1.2, etc.,) and a title should be given to each.

e.g.1, Table 4.2. User evaluation results

e.g.2, Fig.4.1. Idealized random distribution curve

Whenever possible, tables and figures should be placed close to their first references in the text. The titles should give enough information so that they can be understood without referring to the text.

Note that all tables and figures should be referenced from within text.

e.g.1, The Level-1 Context Diagram of the System is shown in fig.1.1.

e.g.2, The results of our method are given in table 4.1.

3 Writing Guidelines

3.1 General

In this section, we give some generally accepted guidelines for academic writing.

The report writing style should be generally of the passive form. It is considered a bad style in a formal report to make explicit references to what the candidate himself did as in for example "I decided...". Scientific papers never use the first person in this way. The passive form as in "it was decided..." is preferred. In the dissertation, the first person could be used judiciously in the Introduction and Evaluation chapters, but the use of "we" is recommended over "I". The use of first person writing should be avoided everywhere else in the dissertation.

Before any piece of writing is done, a good outline of the report, detailing the different chapters in it, has to be made to ensure a good flow for the reader and to avoid unnecessary repetition of text. The suggested chapter structure for the dissertation was given in the previous section of this document. If needed, the candidate should carefully decide on suitable sections and sub-sections for each chapter. It is not recommended to divide the sub-sections further, unless it is absolutely necessary. Then the writer should decide on the required paragraphs for each section/sub-section. The writer should fine tune his outline to make sure only the required information is planned and nothing is duplicated.

Section and sub-section headings should be short, meaningful, and similar in tone. Note that when a section of text is sub-divided, there should ordinarily be at least two sub-sections (e.g., If there is no Section 1.2, you should never number a section as Section 1.1 as then a reader would look for a non-existent Section 1.2).

It is important for the student to carefully decide on the paragraphs to include for each section/sub-section. Each paragraph should consist of the development of a single idea through a collection of sentences. It is suggested in writing literature to compare a good paragraph to a train. The engine gives the direction to a train and the cars follow it. The topic sentence of a paragraph can be considered the engine and the other sentences of the paragraph, the cars of the train. The topic sentence should give the "direction" to where the paragraph is going. In other words, it should give the gist of the paragraph and set its tone. As such, it usually occurs at the beginning of the paragraph although it could come in at the middle or at the end. Each sentence in the paragraph should be relevant to the topic sentence. Following is an example (source: [2]) of a good paragraph with

topic sentence in bold:

Researchers have also compared decision tables to decision trees. *The pioneers of structured analysis and design thought decision tables were best for portraying complex logic while decision trees were better for simpler problems. Others have found decision trees to be better for guiding decision making in practice, but decision tables have the advantage of being more compact than decision trees and easier to manipulate. If more conditions are added to a situation, a decision table can easily accommodate more conditions, actions, and rules. If the table becomes too large, it can easily be divided into sub-tables, without the inconvenience of using flowchart-like tree connections used with decision trees. Creating and maintaining complex decision tables can be made easier with computer support.*

The candidate should avoid *plagiarism* at any cost. Plagiarism is presentation of another person's thoughts or words as though they were candidate's own. The candidate should avoid this when writing his dissertation. All sentences or passages quoted in his dissertation from other people's work have to be specially acknowledged by clear cross-referencing to author, work and page(s). Direct quotations from published or unpublished work of others should always be clearly identified as such by being placed inside quotation marks and a full reference to their source should be provided in the References chapter. Equally, if another person's ideas or judgements are summarized, the candidate should refer to that person in the main text of the dissertation, and have a relevant entry in the References chapter of the dissertation. Failure to observe these rules may result in an allegation of cheating. All suspected cheating will be reported as examination offenses. Any figures or tables, which are not the work of the candidate and are reproduced in your dissertation, should be specially acknowledged with a reference by its title (e.g., Fig.1.1. The Existing System at ABC. (Source: [2]).

The project is an important component of the degree and plagiarism in project work is taken very seriously, and when discovered will imply severe penalties and consequences for the culprit's degree and possibly for his entire future career. Such a candidate will fail the project and the degree examination as a whole when plagiarism in project work is discovered. Candidate will not be allowed to repeat the project and other degree components for a specified number of years. Therefore, it is important to give credit where it is due and acknowledge all work borrowed, and emphasize what the candidate's distinct contribution has been in the project.

3.2   Punctuation

There are many punctuation rules. Those that are relevant for scientific dissertations and many writers disregard are listed in the following subsections.

Period

1. Omit periods after items in a vertical list unless one or more of the items are complete sentences. If the vertical list completes a sentence begun in an introductory element, the final period is also omitted unless the items in the list are separated by commas or semicolons.

   e.g.1, The following users' feedback was considered:

   system administrators

   operators

   e.g.2, Considering the results of this work, it can be confirmed that

   1. the method A is better than method B in most of the cases;

   2. method C is the worst of the three.

2. When parentheses or brackets are used to enclose an independent sentence, the period belongs inside.

   e.g., It was decided to re do the test on a different architecture. (This new choice was made after a lengthy search.)

   When enclosed matter comes at the end of an including sentence, the period should be placed outside the parentheses or brackets.

   e.g., The tests were performed on a cluster of computers available at the UCSC (swelanka1 cluster).

Comma

The use of the comma is mainly a matter of good judgement, with ease of reading the end in view.

1. When the clauses of a compound statement are joined by a conjunction (e.g., and, but, for, or, nor, yet), a comma is usually placed before the conjunction unless the clauses are short and closely related:

   e.g.1, Most Sri Lankan radio and television channels conveniently ignore the laws regarding royalty payments to artists, and as a result, the artists are inconvenienced.

e.g.2, We performed 20 tests and compared the results.

Note: If the coordinate clauses themselves contain commas, semicolons may be used to separate them.

e.g., The method proposed by Perera, which became very popular for simple reasons, was to use a summation of the partial results in the end; but it involved a lot of work for the slave machines.

2. In a series consisting of three or more elements, the elements are separated by commas. When a conjunction joins the last two elements in a series, a comma is used before the conjunction.

   e.g., We had a choice of Java, C, or FORTRAN.

3. When the elements in a series are very simple and are all joined by conjunctions, no commas should be used.

   e.g., It was not sure whether the design was originated by Dias or Sivarajah or Hakeem.

4. The use of *et cetera*, and especially its abbreviation, *etc.,* has long been discouraged in formal writing, although it is more acceptable in lists, tables, and parenthetical series. It is also recommended that, when used, the term be set off by commas.

   e.g., The firm manufactures nuts, bots, nails, wire, etc., at its plant at Ratmalana.

   Such similar expressions such as *and so on, and so forth*, which find more acceptance in formal writing, have also been customarily set off by commas.

   e.g., The manual methods of data entry, modification, deletion, and so forth, were found to be very inefficient.

5. The term *el al.,* (meaning "and others") used when referencing a work involving three or more authors, should have a comma after it (as shown above).

6. Ordinarily, commas are not used following a series of items in a vertical list. If the vertically listed items are phrases, especially long phrases, that grammatically complete the sentence containing them, commas may, but need not, be used. If commas are used, the last item is followed by a period.

   e.g., The difficulties of this method included

the delay in data gathering,

the complexity of data modification,

the slow speed of the operation.

7. A comma is usually used after such expressions as *that is, namely, i.e.,* and *e.g.,*

   e.g., Bones of a variety of small animals (e.g., squirrels, cats, pigeons) are stored in this laboratory.

8. A comma is sometimes necessary to prevent a mistaken junction.

   e.g., Soon after, the new system was rejected by the users due to its inefficiency.

9. When the context calls for a comma at the end of material enclosed in quotation marks, parentheses, or brackets, the comma should be placed inside the quotation marks but outside the parentheses or brackets.

   e.g.1, See Fernando's comments on "adequate testing," which is found in Appendix B of this report.

   e.g.2, Hu gives a comprehensive, though obscure (and somewhat expensive), exposition of the subject.

Semicolon

1. It should always be used between the two parts of a compound sentence when they are not connected by a conjunction.

   e.g., The installed system was hardly promoted by the organization; instead, the manual system was further improved.

2. The following words are considered adverbs rather than conjunctions and should therefore be preceded by a semicolon when used transitionally between clauses of a compound sentence: *then, however, thus, hence, indeed, accordingly, besides, therefore.* The adverb is usually followed by a comma, but if there is no risk of misreading, and if a pause is not desired, the comma may be omitted.

   e.g., System A had failed in the initial evaluation; hence it was not chosen for subsequent testing.

3. When items in a series are long and complex or involve internal punctuation, they should be separated by semicolons for the sake of clarity.

e.g., The membership of the evaluation panel was as follows: managerial staff, 3; system administrators, 2; general users, 2.

4. The semicolon should be placed outside quotation marks or parentheses.

   e.g., It was assumed that all users had read Fernando's "adequate testing"; it was referred to several times in the evaluation.

Colon

1. A colon is used to introduce a formal statement or an extract.

   e.g.1, The rule may be stated thus: Half the period involved in system development should be used for testing.

   e.g.2, We quote from the keynote address by Wait at Icter 2011 Conference: "It seems now that the time has arrived for home networks...

2. A colon is commonly used to introduce a list of a series.

   e.g., Patterson's study included three critical areas: memory, caches, and registers.

3. A colon should not be used to introduce a list that is the complement or object of an element in the introductory statement.

   e.g., The systems excluded were

   backup

   data migration

4. The terms *as follows* and *the following* require a colon if followed directly by the illustrating or enumerated items or if the introducing clause is incomplete without such items.

   e.g., The steps are as follows:

   1. Design the algorithm...

   If the introducing statement is complete, however, and is followed by one or more other complete sentences, a period may be used.

   e.g., An outline of the procedure follows. Note that care was taken to eliminate work load variation of the computer. 1. The required program is started on the computer...

5. If the material introduced by a colon consists of more than one sentence, of if it is a formal statement, it should begin with a capital letter. Otherwise, it may begin with a lowercase letter.

   e.g.1, We wish to state the following: For maximum speed, all programs should only use data that are local. Non-local data will always have some latencies attached.

   e.g.2, System A was insupportable: not only had it failed all its evaluations, but further was very expensive.

6. The colon should be placed outside quotation marks or parentheses.

   e.g., We were puzzled by the behaviour of most of the users involved in the evaluation (of System A): none of them had difficulty in navigating the interface.

Parentheses

1. Parentheses, like commas and dashes, may set off amplifying, explanatory, or digressive elements. If such parenthetical elements retain a close logical relation to the rest of the sentence, commas should be used instead. If the logical relation is more remote, dashes or parentheses should be used.

2. An expression such as *that is, namely, i.e., e.g.,* and the element it introduces, may be enclosed in parentheses if the break in continuity is greater than that signalled by a comma.

3.3   Other

We list below some more guidelines that will improve your dissertation:

1. Please also note that in writing, only the first letter of a proper noun should be capitalized at the middle of a sentence. All the others should be written in lower-case. If you are not sure whether to capitalize or not, use lower-case.

2. Note also that you should not use shortened word forms in writing. Thus for example, *have not* should be used instead of *haven't, is not* instead of *isn't, do not* instead of *don't* and so on.

3. If you have to write numbers below ten in a statement, use words instead of digits. Two correct examples are: *We performed seven tests with our new system.* and *There were 20 cases of error.*

4. Use of italics: Key terms in a discussion, terms with special meaning, and in general, terms to which the reader's attention is directed are often italicized on **first use**. Also, technical terms, especially when accompanied by its definition, is often set in italics the **first time** it appears in a discussion.

   e.g., The *cache line* is the smallest unit of data transfer.

5. Note that **its** (without the apostrophe) is used on indicate possession.

   e.g., The system failed in its integration test.

4   Conclusion

This document has thus provided you with a guideline to prepare your dissertations. Although not highlighted here, it is very important to write your dissertations in correct English. Thus it is the responsibility of the student to make sure that all sentences are grammatically correct. Your grammar skills will automatically improve by increasing your amount of reading of good material. The task of writing grammatically correct sentences will also be made easier by cultivating the habit of writing short sentences that are correct. Note also that your dissertation should be also free of any spelling errors to make it perfect.

Also note that we have provided you with only a guideline. As mentioned at the beginning of this document, the readers of your dissertation would be your examiners from UCSC as well as any future readers that will either add to your work or use the system that you developed. Therefore your should judiciously select the content to suit that readership.

A   Referencing using the IEEE style

IEEE is a numbered style with two components:

In-text references where references are numbered from [1] in the order of appearance in the article and

A reference list, displayed at the end of the article which provides full details of all references cited in-text. The references are ordered as they appear in the in-text references (in order of citation, not in alphabetic order).

In-text Referencing

Using this system, references are numbered in the order in which they are first cited in the text. If the same reference is cited later in the text, the

same number is given. For example:

"The theory was first put forward in 2001 [1]"

"Perera [2] has argued that..."

"Recent studies [1], [3], [4], [15] have suggested that..."

Reference List

This is provided at the end of the dissertation in a separate chapter titled "References". The details of all the literature that has been referenced in-text in your dissertation should be given here in a **consistent** format. The format examples for different types of literature commonly used in dissertations are given below. It is very important to follow the correct use of punctuation marks and italics.

References must be listed in the order in which they were cited (numerical order) not in alphabetical order.

Books:

Elements of the citation Author(s) First name or initials. Surname, or name of organization, Title of book followed by fullstop if no edition statement, or comma if there is an edition statement, ed., Edition (except the first). Place of publication City: Publisher, Year of Publication. In addition, to the above citation details, provide page numbers if you have quoted specific facts or materials e.g. pp. 28-30.

Example C. W. Lander, Power Electronics, 3rd. ed., London: McGraw-Hill, 1993.

B. Hancock, Advanced Ethernet/802.3 Network Management and Performance. Boston: Digital Press, 1994, pp. 5-8.

Sections/chapters of books

Elements of the citation: Author(s) First name or initials. Surname, "Title of the chapter," in Title of the book, ed., Edition (except the first) vol., volume if available, Ed. editor if available, Place of publication: Publisher, Year of Publication, pp. Chapter/s or First and Last pages of the article.

Example: G. K. Knopf and A. S. Bassi, "Biological-based optical sensors and transducers," in Opto-mechatronic Systems Handbook: Techniques and Applications, Hyungsuck Cho, Ed. Boca Raton, FL: CRC Press, 2003, pp. 195-210.

Papers from conferences

Elements of the citation: Author(s) First name or initials. Surname, "Title of paper," in Title of the Conference, Editor/s firstname last name if available, Ed. Place of publication: Publisher if available, Date of publication, pp. first and last pages of the paper.

Example: A. H. Cookson and B. O. Pedersen, "Thermal measurements in a 1200kV compressed gas insulated transmission line," in Seventh IEEE Power Engineering Society Transmission and Distribution Conference and Exposition, 1979, pp. 163-167.

Journal articles

Elements of the citation: Author(s) First name or initials. Surname, "Title of article," Title of journal, vol. volume, (issue number), pp. first and last pages of the article, Date of issue month if available year.

Example: K. P. Dabke and K. M. Thomas, "Expert system guidance for library users," Library Hi Tech, vol. 10, (1-2), pp. 53-60, 1992.

Theses or dissertations

Elements of the citation: Author(s) First name or initials. Surname, "Title of dissertation," Type of dissertation PhD dissertation or doctoral dissertation or master's dissertation, Department, University, Place, State, Country, Year of Publication.

Example: S. Birch, "Dolphin-human interaction effects: frequency mediated psychophysiological responses in biological systems," doctoral dissertation, Dept. Electrical and Computer Systems Engineering, Monash University, Victoria, Australia, 1997.

Electronic book

Elements of the citation: Author(s) First name or initials. Surname. (date of publication year, month day). Title. (ed. edition except the first) [Type of medium]. volume number if needed. (issue number if needed). Available: site/path/file

Example: A. K. Salkintzis. (2004). Mobile Internet: enabling technologies and services. [Online]. Available: http://www.engnetbase.com/books/1253/ 1631fm.pdf

V. Guruswami. (2004). List decoding of error-correcting codes: winning dissertation of the 2002 ACM doctoral dissertation competition. (2nd ed.) [Online]. 3282. Available: http://portal.acm.org/3540240519.pdf

Online journal article

Elements of the citation: Author(s) First name or initials. Surname. (year, month). Title of article. Title of Journal. [Type of medium]. volume number (issue number), pp. pages. Available: site/path/file Note: the dates where months are included the following abbreviations can apply: Write May, June, and July in full. Abbreviate the other months: Jan., Feb., Mar., Apr., Aug., Sept., Oct., Nov., and Dec. Use a slash for bimonthly issues (Aug./Sept. 2000) and a hyphen or en dash for a quarterly (July-Sept. 2000)

Example: J. S. Fulda. (2000, Mar.). The Internet as an engine of scholarship. ACM SIGCAS Computers and Society. [Online]. 30 (1), pp. 17-27. Available: http://doi.acm.org/10.1145/572217.572222

J. Farrell. (2007, May). In Wikipedia we trust? Cosmos Online [Online]. Available: http://www.cosmosmagazine.com/node/1339

Electronic conference paper

Elements of the citation: Author(s) First name or initials. Surname. (year, month). Title. Presented at Conference title. [Type of Medium]. Available: site/path/file

Example: X. Yang. (2003, Aug.). NIRA: a new Internet routing architecture. Presented at ACM SIGCOMM FDNA 2003 Workshop. [Online]. Available: http://www.isi.edu/newarch/DOCUMENTS/yang.nira.pdf

Website

Elements of the citation: Author. (year, month). Title. [Type of Medium]. Available: site/path/file

Example: (2007, Mar.). Dr Jean Armstrong: Brief Biography [Online]. Available: http://www.ecse.monash.edu.au/staff/jeana/aboutarmstrong.html

A Sample Reference List

[1] C. W. Lander, Power Electronics, 3rd. ed., London: McGraw-Hill, 1993.

[2] B. Hancock, Advanced Ethernet/802.3 Network Management and Performance. Boston: Digital Press, 1994, pp. 5-8.

[3] G. K. Knopf and A. S. Bassi, "Biological-based optical sensors and transducers," in Opto- mechatronic Systems Handbook: Techniques and Applications, Hyungsuck Cho, Ed. Boca Raton, FL: CRC Press, 2003, pp. 195-210.

[4] A. H. Cookson and B. O. Pedersen, "Thermal measurements in a 1200kV compressed gas insulated transmission line," in Seventh IEEE Power Engineering Society Transmission and Distribution Conference and Exposition, 1979, pp. 163-167.

References

[1] C.A.R.Hoare. An axiomatic basis for computer programming. *Communications of the ACM*, 12(10), October 1969.

[2] J.S.Valacich J.A.Hoffer, J.F.George. *Modern System Analysis and Design.*