THESIS GUIDELINES

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THESIS GUIDELINES: style notes

STYLE NOTES - ref. ACM (Association for Computing Machinery), *Handbook of Technical Writing* (St. Martin's Press), *Science and Technical Writing* (Routledge), and *A Manual for Writers of Term Papers, Thesies, and Dissertations* (Turabian – in Bookstore) for commonly accepted standards for technical writing:

I.   Do **not** use text right justification features if preparing text on a word processor. Thesis text requirements generally employ the word processor settings: left margin = 1.5", right = 1", and top/bottom = 1" (pagination is to be centered in the bottom margin, 0.5" above the bottom edge of the page, format as noted below). You may want to slightly increment the margins since some printers/copiers may slightly shrink them. Hyphenate at end of lines with discretion and only to improve appearance. Do **not** use first person singular. Use either first person plural ("we") or third person singular ("the author ... she"). A series of points may be emphasized by indenting them, marking each with a "bullet" (e.g., "•").

II.   **Typing, type fonts, point size, and method of production**

A.   Use black ink only, of uniform darkness and density throughout. Use one side of the paper only. Use only thesis paper (available through the book store); any specially prepared drawings or figures may be transferred to thesis paper via photocopy composition/reduction and to electronic form by scanning.

B.   With the possible exception of figures, the document should be produced via a single printing device. Use only a standard typeface Times Roman, 12 point. Any program listing should still be presented in Courier, since it uses a uniform spacing amount per character, and employ Roman everywhere else in the document. Do not use font variations such as shadow, outline, emboss, engrave. Italic and Bold are only to be used sparingly, and only when appropriate (if in doubt, ask).

C.   Figures and appendices may require preparation on a different device (such as a plotter) and some amount of hand drawing. A different type-face and point size may be required. The 8 1/2" by 11" page size for the thesis may require photo composition/reduction (any pages of the sort will also need to be scanned in for the electronic copy). Be careful that all figures and appendices are clean, carefully prepared, and legible. All hand drawing should be professional in appearance. Be careful to use appropriate drawing materials (many felt tip pens are not acceptable). If in doubt, ask.

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A. A margin of 1 1/2" on the left (or **slightly** greater) is absolutely necessary for binding purposes. Top, bottom and right margins should be > 1". Pagination goes in the bottom margin 1/2" from the bottom of each page.

B. For widows and orphans:

If the first line of a new paragraph would come at the bottom of a page, simply put it on the next page leaving an extra space between text and pagination at the bottom of the preceding page.

If the last line of a paragraph would come at the top of the next page, put the last two lines of the paragraph at the top of the next page leaving an extra space between text and pagination at the bottom of the preceding page.

C. For the thesis title page

Center the text on the page with a 2 1/2" margin at the top. See the sample title page for an example.

D. For titled pages; namely, the first page of each major component (e.g., CONTENTS, ABSTRACT, VITA) and the first page of each chapter in the text body:

Increase the top margin to 1 1/2" above the title. See the samples for examples. When double-spacing, you may use 4 extra lines (single-spaced) above the title information to correspond to the normal double-space advance.

IV. Where to use single spacing

A. Preface material, in the manner indicated on the "SAMPLE:" pages that follow

   Title page - within groupings as indicated on the SAMPLE: TITLE PAGE
   Copyright notice

B. In the main text body

   Multi-line titles - for example, a section title that requires more than one line to
      fit within margins
   Footnotes
   Long quotations - these should be offset with an indent, left and right of 1/2" (5
      spaces)
 * Tables and figures - see the SAMPLE: TEXT BODY for an illustration
      (note that tables and figures should also be **boxed**)
   Appendices (you may also reduce font point size to as low as 8)
   Reference list - see sample: references

 * For these, single spacing is used only on items needing more than 1 line of text

V. Where to Double Space

A. In the acknowledgement/dedication (if present)

B. In the table of contents, list of tables, and list of figures **except for items
   requiring more than 1 line**.

C. In the abstract

D. In the main text body except as noted above in IV.

E. In the vita

VI. Pagination

A. Do not paginate the title page.

B. For the pages immediately following the title page and preceding the main text,
   paginate using lower case Roman (ii, iii, iv, v, etc.).

C. Beginning with the main text body use the form

- 2 -

D. Center pagination at the **bottom** of the page 1/2" above the bottom of the page.

For examples, see the SAMPLE pages that follow.

VII. Paragraphs

Do not begin paragraphs with an indent. Instead separate paragraphs with a blank line in single-spaced text and 3 blank lines in double-spaced text (one extra double line).

VIII. Chapter and Section Headings

A. Begin each chapter on a new page with the title in the form

Chapter 3

REAL-TIME FEEDBACK

centered, with a 1.5" margin above and 2 lines below (add one extra line when double-spacing). If the title is too long to fit, single space the continuation onto the next line.

B. Identify sections of chapters by adding decimal qualification to the chapter number; e.g., 3.1, 3.2, ... or subqualification such as 3.1.1. 3.1.2, ... for subsections. Left justify and title using the format:

2.3.2 Circular Analysis

for both sections and subsections. Separate the section title from the surrounding text by 2 blank lines (an extra single-space line when double-spacing); see the body of text sample for examples.

IX. Tables and figures

A. Place tables and figures as near after the place they are referenced in the text as feasible.

B. Draw a box around the table or figure to offset it and place it as soon after the paragraph in which it is referenced as feasible.

C. Center the title of the table or figure immediately under the box; use the title format

<p style="text-align:center">Figure 1: Real-time Raster Feedback</p>

See the body of text sample for an example.

D. Leave at least 3 blank lines between the table or figure and any surrounding text (an extra carriage return when double-spacing).

X.   Referencing

A. Identify references in the reference list by the notation
    [<lead author last name><last 2 digits of year>]
    e.g.,
    [Williams96]
    If the author has more than one article in the year add qualifiers A,B,... to identify each particular reference; e.g.,
    [Henry97A] and [Henry97B]

    If the reference has no identified author, use an abbreviation of the reference title in place of the lead author last name. Print publications should always have a date. For electronic sources, there may be as many as three dates giving year of publication, year of last update, and year of last access. The first of these dates that can be included in the reference is the one to use for the last 2 digits of the year.

    Further examples for this format are given in the example reference list.

B. Separate references into two sections:

    Print publications

    Electronic sources

C. Alphabetize each of these sections on the reference identifiers.

D. For print publications provide detail on each reference to include in order:

    Lead author, last name first and at least one initial.

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    Title of the article in quotes (omit if the reference is a book).

    Title of the journal (or book) in which the article appears, underlined (continuous).

    For periodicals: Volume number, issue number then in parentheses the month (if available) and year of the publication.

    <editor name>, ed. for papers referenced from edited collections.

Publisher and city for books and edited collections only.

For books and edited collections: year of the publication.

Page numbers on which the article appears (for journals and edited collections only).

E. Electronic sources:

Citations for electronic sources (such as web references) should be used only if you know the source is relatively stable. If a source is available as a print publication, include only the print publication reference, even if your own access to the source has been electronic. For electronic-only media provide detail on each reference to include in order:

The lead author (if known), last name first and at least one initial.

Co-authors, initials followed by last name; if more than 3 use "et al." after the lead author to acknowledge the extra ones.

Title of the online document and/or title of the web site (if not obvious, try looking at the page source <title> section and failing that use the subject line for the document). Put the title in quotes if the site is one containing multiple articles.

For on-line periodicals: Volume number, issue number then in parentheses the month (if available) and year of the publication

URL for the reference.

For other than on-line periodicals, provide the date or date last changed if provided on the site.

Date you last accessed the source electronically – accessibility for all electronic references should be verified in producing the final draft of your paper; any reference no longer accessible should be deleted.

F. Odd cases such as dissertations, material on CDs but not the web, references without identified authors and the like are illustrated in the example reference list. In general, sufficient information should be given to enable an interested reader to obtain the reference material if so desired. This kind of material should be included in the section (print or electronic) that best represents the nature of the material (e.g., a CD is electronic, government document is print). Unpublished information should be referenced only if it is not critical to the thesis, and even then only if it can be obtained by interested parties relatively easily. Any email communication should be placed in the appendix and cited there.

G. In the body of the text notate a reference by using its identification; e.g., [Williams96]. A specific page or pages may also be identified by the notation
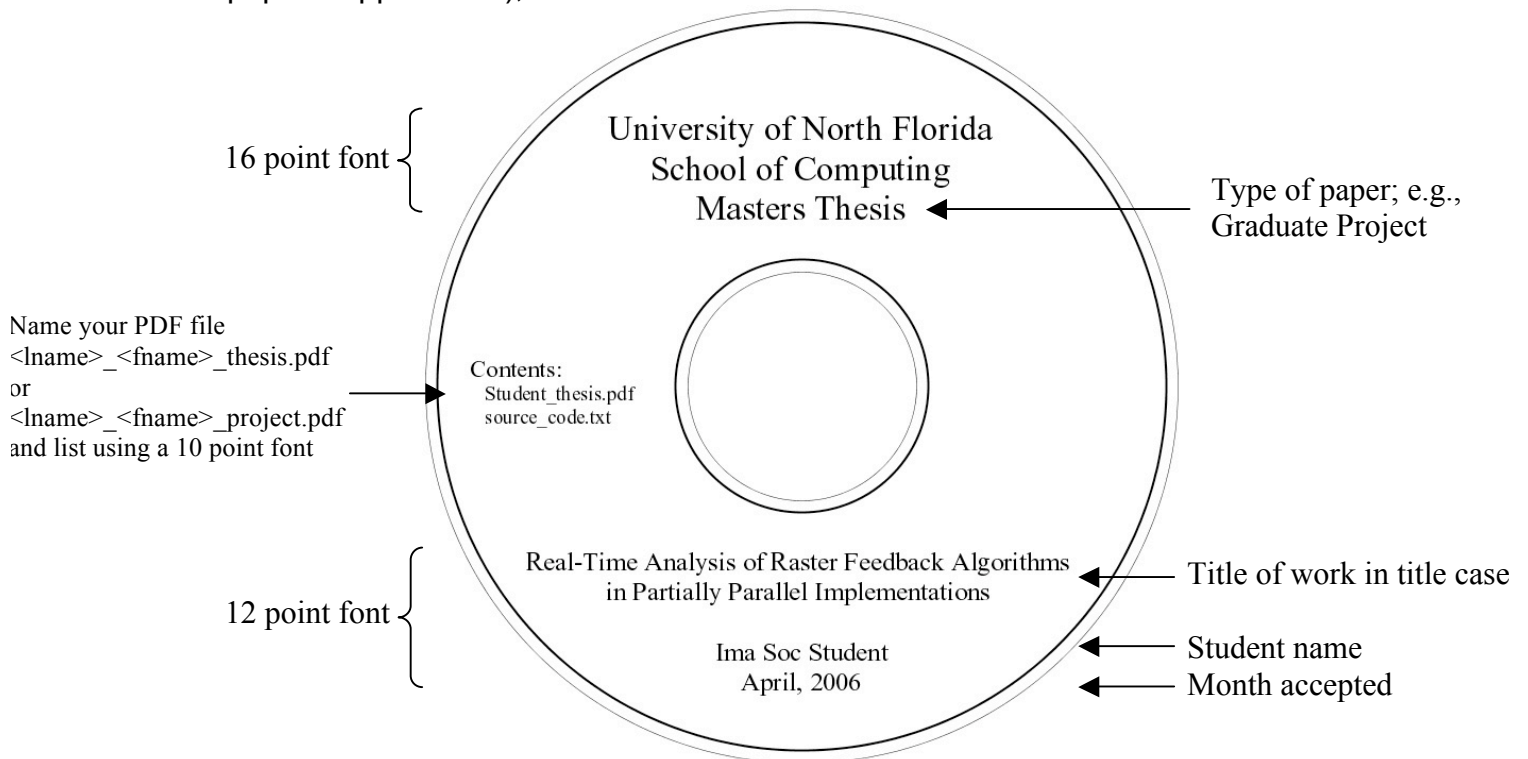
[Williams96, page 13] or [Williams96, pp. 13-15]. Additional examples are given in the example main text body.

XI. Vita

The vita should be a short narrative (250 words maximum) outlining the professional qualifications of the author, concentrating on the more recent ones. It may contain a small amount of personal data as space permits. It should be written in third person singular.

XII. CD Label Format

The CD is to contain a PDF file of your entire write-up. If you have other pertinent work that a reader might want to access separately (such as source code in your paper's appendices), include it in an additional file.

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Contents:
Student_thesis.pdf
source_code.txt

Real-Time Analysis of Raster Feedback Algorithms
in Partially Parallel Implementations

Title of work in title case

12 point font

Ima Soc Student
April, 2006

Student name
Month accepted

XIII. Footnotes

If used, footnotes should be numbered consecutively, 1, 2, 3, ...
The footnote reference in the text should occur as a superscript number with the footnote placed at the bottom of the page on which the reference occurs.

Most word processors handle footnotes automatically; if not, separate the footnote[1] from the text by 3 or more blank lines and a 2" line; e.g.,

---

[1] This is a footnote example; it should be single-spaced if it exceeds one line

REAL-TIME ANALYSIS OF RASTER FEEDBACK
ALGORITHMS IN PARTIALLY PARALLEL IMPLEMENTATIONS

by

Ima Soc Student

A thesis submitted to the
School of Computing
in partial fulfillment of the requirements for the degree of

Master of Science in Computer and Information Sciences

UNIVERSITY OF NORTH FLORIDA
SCHOOL OF COMPUTING

April, 2006

The thesis "Real-time Analysis of Raster Feedback Algorithms in Partially Parallel Implementations" submitted by Ima Soc Student in partial fulfillment of the requirements for the degree of Master of Science in Computer and Information Sciences has been

Approved by the thesis committee: Date

_____   _____

\<name\>
Thesis Advisor and Committee Chairperson

_____   _____

\<name\>

_____   _____

\<name\>

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_____   _____

\<name\>
Director of the School

Accepted for the College of Computing, Engineering, and Construction:

_____   _____

\<name\>
Dean of the College

Accepted for the University:

_____   _____

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Dean of the Graduate School

ACKNOWLEDGEMENT

I wish to specially thank my spouse for unwavering support and understanding during the

many hours I dedicated to achieving this milestone in my life and career.

CONTENTS

FIGURES

ABSTRACT

Raster feedback algorithms appear to be the most promising means of achieving true parallelism in black box processors. Since black box processors may behave unpredictably in certain circumstances, real-time techniques are needed for the analysis of raster feedback algorithms. This problem has been treated to date only in the context of truly parallel implementations . . .

   . . .

. . . via the tactic of partially parallel implementation. Representative examples of the technique are examined in actual implementation.

Implementation issues for the MUX-1 and the PMXA workstation using PP-C techniques show …

… a contrast with existing implementations.

Chapter 1

INTRODUCTION

Raster feedback algorithms were initially formulated in conjunction with the AZ10

project [Williams02] as the most promising means of achieving true parallelism in black

box processors. A black box processor is one which "has known response characteristics

for specific inputs, but which may behave unpredictably in other circumstances"

[French96, page 14]. While a number of techniques have been developed for the analysis

of raster feedback algorithms [e.g., Henry03A, Tsou04], very little is known regarding

accomplishing the analysis in real time. Since raster feedback algorithms are normally

considered only in the true parallel context, construction of effective analytical

techniques for real-time function has proven to be an elusive research goal to date

[Anraha05].

In this paper, we approach the problem from a more restrictive viewpoint; namely, . . .

.   .   .

. . . in a recent article on rastering techniques . . .

.   .   .

of [Tsou04]. This solution has weaknesses that can be partially addressed if the problem

is approached via the tactic of partially parallel implementation.

1.1   Feedback Mechanisms

The basic feedback mechanism usually employed is that of alpha-beta response . . .

. . . which is not the case for all systems studied.

1.1.1   Ghost Response in Some Implementations

Various authors have reported that . . .

.   .   .

. . . in the first case. In the second case the situation is not . . .

. . . in the first case. In the second case the situation is not . . .

. . .

. . . as easily understood. This can be seen by considering the case of three processors as

pictured in Figure 1. The first processor serves as a . . .
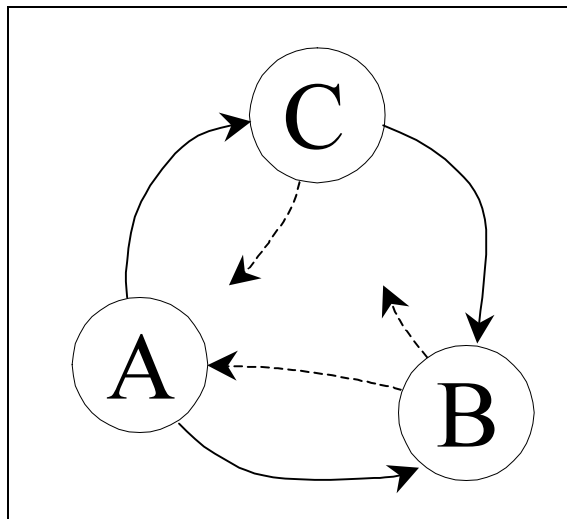
The final processor is caught in transition.

Figure 1: Real-time Raster Feedback
under Processor Control

This demonstrates the viability of the paradigm …

.   .   .

. . . leading on to the conclusion that not every approach is reasonable.

The PMX workstation used for the experiment was programmed in the most recent

revision of PP-C [PP-C03]. Others [Kuthbert04, PMX Experimentation02, Thornton04]

have conducted experiments similar to ours, but …

Chapter 2

PARTIALLY PARALLEL ANALYSIS

In this chapter, . . .

. . . which has interesting outcomes for PMX workstation environments.

2.1   Fractional Feedback Analysis

2.1.1   Deep Transcendence in Depth-First vs. Breadth-First Analysis of
        Contemporaneous Rasterization Approaches to High-Level Computing
        Environments

In considering the problem of deep transcendence . . .

REFERENCES

Print Publications:

[Anraha05]
Anraha, T. L and G. T. Smith, "Real-time Anomalies in Processing Feedback
      Algorithms," <u>IEEE Transactions on Parallel Computing</u> 3, 2 (2005), pp. 78-85.

[ANSI89]
American National Standards Institute, <u>American National Standard Programming
      Language PP-C</u>, ANSI X7.29, New York, 1989.

[Culloghtsen97]
Culloghtsen, S. S., "A Simple Approach to Rastering Analysis," <u>Rastering Analysis</u>,
      C. H. Vick, ed., McGraw-Hill, New York, 1997, pp. 87-92.

[French96]
French, A. B., <u>Black Box Systems and Algorithms</u>, Arguile and Sons, Paris, 1996.

[Gargantus prep]
Gargantus, N. F., "Real-Time Semi-rastered Analytical Inversions for MK-series
      Processors," accepted for publication subject to revision in <u>IEEE Transactions on
      Parallel Computing</u>, contact AG Enterprises, Inc., 132 North Ridge Circle,
      Salmonville, WA 87321.

[Henry03A]
Henry, R. J., T. C. Chen, F. Sturbin, and J Coldster, "Report on the ARGH Workshop on
      Raster Feedback Algorithms," <u>Proceedings of the 2003 ACM Conference on Parallel
      Computing</u> 1, 1 (February, 2003), pp. 135-137.

[Henry03B]
Henry, R. J. and T. C. Chen, "Rastering Feedback in Dual-processor Systems,"
      <u>Proceedings of the 2003 ACM Conference on Parallel Computing</u> 1, 1 (February,
      2003), pp. 39-44.

[Henry03C]
Henry, R. J., "Some Recent Results on Raster Feedback Analysis," Technical Report
      USNY-CSE-122, Department of Computer Science and Engineering, University of
      Schenectady, New York, 2003.

[PP-C03]
PP-C User's Manual for PMX Workstations, Preston-Manllichsen Co., Fresno, CA, 2003.

[Tsou04]
Tsou, A. K., R. C. Calumbe, and K. L. Taylor, "A Static Approach to the Analysis of Raster Feedback Algorithms," <u>Journal Nationale de France</u> 53, 1 (January, 2004), pp. 35-63.

[Williams02]
Williams, A. B., "Fast Response in Parallel Implementations for Raster Feedback," Ph.D. dissertation, Department of Biocomputing, University of Southwest Arkansas, North Platte, 2002.

Electronic Sources:

[GRASP04]
GRASP lab, http://www.cis.upenn.edu/~grasp/new/home.shtml, last revision March 3, 2004, last accessed April 15, 2006.

[Kuthbert03]
Kuthbert, A. P., "Experiments Using PP-C", http://www.PMX.com/PPC/trials.html, 2003, last accessed April 3, 2006.

[PMX Experimentation02]
PMX Experimentation with PP-C, 2002, available only on CD-ROM by order from PMX Corporation, http://www.PMX.com/archival_sales.html, last accessed April 1, 2006.

[Sloan05]
Sloan, G. T. and R. V. Andrews, "Comparison of PMX/PP-C implementations with RPP/04", <u>University of East Nevada Lecture Series</u>, 3 (January, 2005), http://www.uen.edu/UENLS06/papers/gtsloan.pdf, last accessed April 15, 2006.

[Thornton04]
Thornton, H., "PP-C Trials and Travails", http://www.avu.edu/~hthornton/PPC/ex3.html, last revision 2004, last accessed April 15, 2006.

[ZSTORM03]
ZSTORM API Specification, 2003, download from http://www.zstorm.org/downloads, last accessed March 15, 2006.

APPENDIX A

MUX-1 Code Listings

```
*   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *   *
*                                                                              *
*   Program name: MainMUX  . . .                                               *

      . . .
```

VITA

Ima Soc Student has a Bachelor of Arts degree from Mid-central Kentucky University in Applied Sciences, 2000 and expects to receive a Master of Science in Computer and Information Sciences from the University of North Florida, April 2006. Dr. Nathan Gargantus of the University of North Florida is serving as Ima's thesis advisor. Ima is currently employed as a systems programmer analyst at JRQ Industries and has been with the company for 3 years. Prior to that, Ima worked 18 months as a programmer trainee and junior programmer analyst with IBM in East Brockport, Kentucky.

Ima has on-going interests in real-time and parallel systems, and has extensive experience with IBM's VPQ system development environment. Ima has extensive programming experience in C++, Imagic, and PP-C in MUX-1 and IBM 9923 systems environments.   Ima's academic work has included use of Java, COBOL, Visual BASIC, ZSTORM, and SQL as well. Ima is fluent in French and competes in 1 marathon per year. Married for the last 2 years, Ima has 1 child, age 6 months.