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BOSTON UNIVERSITY
COLLEGE OF ENGINEERING

Dissertation

**OPTICAL MIMO MODULATION TECHNIQUES UNDER
ILLUMINATION CONSTRAINTS**

by

PANKIL M. BUTALA

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Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

2015

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*Facilis descensus Averni;
Noctes atque dies patet atri janua Ditis;
Sed revocare gradum, superasque evadere ad auras,
Hoc opus, hic labor est.* Virgil (from Don's thesis!)

Acknowledgments

Here go all your acknowledgments. You know, your advisor, funding agency, lab mates, etc., and of course your family.

As for me, I would like to thank Jonathan Polimeni for cleaning up old LaTeX style files and templates so that Engineering students would not have to suffer typesetting dissertations in MS Word. Also, I would like to thank IDS/ISS group (ECE) and CV/CNS lab graduates for their contributions and tweaks to this scheme over the years (after many frustrations when preparing their final document for BU library). In particular, I would like to thank Limor Martin who has helped with the transition to PDF-only dissertation format (no more printing hardcopies – hooray !!!)

The stylistic and aesthetic conventions implemented in this LaTeX thesis/dissertation format would not have been possible without the help from Brendan McDermot of Mugar library and Martha Wellman of CAS.

Finally, credit is due to Stephen Gildea for the MIT style file off which this current version is based, and Paolo Gaudiano for porting the MIT style to one compatible with BU requirements.

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OPTICAL MIMO MODULATION TECHNIQUES UNDER ILLUMINATION CONSTRAINTS

PANKIL M. BUTALA

Boston University, College of Engineering, 2015

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ABSTRACT

Have you ever wondered why this is called an *abstract*? Weird thing is that its legal to cite the abstract of a dissertation alone, apart from the rest of the manuscript.

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List of Abbreviations

CAD	Computer-Aided Design
CO	Cytochrome Oxidase
DOG	Difference Of Gaussian (distributions)
FWHM	.....	Full-Width at Half Maximum
LGN	.....	Lateral Geniculate Nucleus
ODC	.....	Ocular Dominance Column
PDF	.....	Probability Distribution Function
\mathbb{R}^2	.....	the Real plane

Chapter 1

Introduction

1.1 A few remarks before you start

Please read the short pointers below and on the subsequent pages; this will help you avoid frustrations when submitting the final dissertation to the library.

Your thesis should have 1.5in left and top margins, and 1in right and bottom margins. Getting this right is tricky since it may depend on your particular Latex installation. Most likely you will need to adjust some of the dimensions set up at the beginning of "bu_ece_thesis.sty" in this folder. Basically, every installation should have the base margin of 1in at the left and top, but this is not always the case. For example, the TexStudio/MiKTeX installation this document was set up on, has the default top margin of 0.3125in and so an additional margin of 0.6875in was added via `\topmargin`. In order to adjust these dimensions, you may want to follow these steps:

- compile the document into PDF,
- open the document in Acroread, set it to full-page viewing and magnification to 100%
- navigate to a "full" page with the text extending from the very top to the very bottom and full-width left to right,
- measure the margins and adjust accordingly,

- if you are planning to print a hardcopy, you need to make sure to select "Page scaling" to "None" in Acrobat.

Another issue that BU librarians may complain and you are likely to encounter are long URLs or other unbreakable text. In case of long URL addresses, you should use the URL package; please see suitable documentation on-line.

However, if you encounter a long unbreakable word (e.g., foreign) the URL package does not help. Have a look at the example extending into the page margin:

Consider the following Java-JDT plugin name in German: "‘Plugin-Entwicklungsumgebung’'.

Clearly, this is a problem, and BU librarians will complain. One way of fixing this issue is to enclose the offending paragraph in `\begin{sloppypar}` and `\end{sloppypar}`, resulting in the following outcome:

Consider the following Java-JDT plugin name in German: "‘Plugin-Entwicklungsumgebung’'.

Indeed, although the paragraph spacing becomes sloppy, at least you can hand in the thesis!

LaTeX has a steep learning curve. You can use the original book by Lamport to learn more (Lamport, 1985), but there are many on-line resources with excellent instructions and examples. Just Google a LaTeX topic you would like to explore.

As far as editing and compilation of LaTeX sources, if you have not found one yet, TexStudio seems to be quite popular.

Chapter 2

Body of my thesis

2.1 Some results

Here goes all the important stuff, likely with a lot of graphics like this:

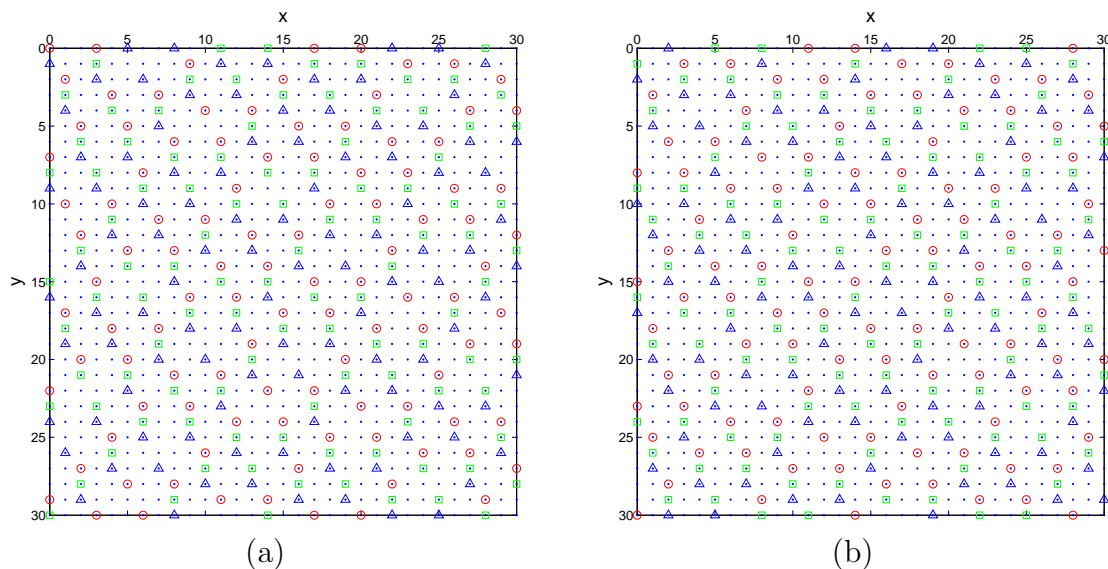


Figure 2.1: Assignment of single-view intensities to RGB components:
(a) view #1; and (b) view #2.

You will also be using a lot of citations. Here is the format required in the dissertation: (Lamport, 1985),(Debreuve et al., 2001).

In all likelihood, you will need to insert tables. See one example on the next page.

Table 2.1: Absolute disparity error per pixel for the test data from Fig. 2.1 and different parameter values. In each experiment one parameter is adjusted while other parameters are unchanged.

$\eta = 6000, \mu = 2000$			$K = 10, \mu = 2000$			$K = 10, \eta = 6000$		
K	u_1	u_2	η	u_1	u_2	μ	u_1	u_2
3	0.52	0.46	1000	0.54	0.45	100	1.00	1.16
7	0.47	0.43	3000	0.43	0.40	1000	0.53	0.47
10	0.35	0.36	6000	0.35	0.36	2000	0.35	0.36
12	0.37	0.36	9000	0.37	0.37	3000	0.44	0.43

Of course, there must be a Table of Contents at the beginning of the thesis.

Chapter 3

Conclusions

3.1 Summary of the thesis

Time to get philosophical and wordy.

IMPORTANT: In the references at the end of thesis, all journal names must be spelled out in full, except for standard abbreviations like IEEE, ACM, SPIE, INFOCOM, ...

Appendix A

Proof of xyz

This is the appendix.

References

- Debreuve, E., Barlaud, M., Aubert, G., Laurette, I., and Darcourt, J. (2001). Space-time segmentation using level set active contours applied to myocardial gated SPECT. *IEEE Trans. Med. Imag.*, 20(7):643–659.
- Lamport, L. (1985). *TEX—A Document Preparation System—User’s Guide and Reference Manual*. Addison-Wesley.

CURRICULUM VITAE

Joe Graduate

Basically, this needs to be worked out by each individual, however the same format, margins, typeface, and type size must be used as in the rest of the dissertation.