

THE UNIVERSITY OF SOUTH ALABAMA
SCHOOL OF COMPUTING

LOCAL MODEL FEATURE TRANSFORMATIONS

BY

Christopher Scott Brown

A Dissertation

Submitted to the Graduate Faculty of
The University of South Alabama
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

in

Computing

May 2020

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If there is anyone you would like to thank, this should go here. This page is optional. If you would like to not have an `acknowledgements` section, simply delete the `\acknowledgements` bit in the preamble of the main `.tex` file.

A dedication page is also optional, but the paginations, etc have not been implemented in this template. If you wish to do so, the macros in `southalabama.cls` for the `\acknowledgements` command should provide a good starting point.

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NOMENCLATURE

LITN Listed in the Nomenclature

ABSTRACT

Brown, Christopher, Scott, Ph.D., University of South Alabama, May 2020. Local Model Feature Transformations. Chair of Committee: Ryan Benton, Ph.D.

If this is a thesis, the abstract may only be one page in length. If this is a dissertation, it may be two pages in length.

CHAPTER I

INTRODUCTION

This is a template for LaTeX theses and dissertations at the University of South Alabama. Most of the formatting minutia are handled automatically by the macros defined in the `southalabama.cls` file. Some features that are not handled automatically and require the author to format input manually are discussed in Chapter II. For example, numbering and creation of references for figures, etc in the table of contents or the citations section are also automatic, but require input in a particular manner.

1.1 Compiling

To compile this document, use: `pdflatex ms; bibtex ms; makeindex ms.nlo -s nomencl.ist -o ms.nls; pdflatex ms; pdflatex ms`

The `bibtex` bit handles the references section, and the `makeindex` bit builds the nomenclature table. The multiple calls to `pdflatex` build the various auxiliary files and are a normal part of LaTeX life.

CHAPTER II

USER RESPONSIBILITIES

There are a few things that you need to make sure are formatted and/or input correctly for the automation to work correctly. This chapter describes some of these things.

2.1 Front Matter

Most of the front matter is automatically compiled given the various variable definitions in the preamble of the main tex file. You need to fill these out to include your name, degree type, department, etc etc etc. If you have a very large number of committee members, or a very long thesis title, or some other special requirement of



Figure 1. The “short” caption. Make sure the “short” caption and the first sentence of the “full” caption are identical.

Table 1. The “full” caption.

		Predicted					
		Method 1		Method 2		Method 3	
True		-	+	-	+	-	+
	-	14	5	16	3	0	19
	+	14	5	10	9	0	19

the front matter, you may need to edit the spacing between individual lines in the class file.

2.2 Names of Stuff

Capitalization and proper punctuation are the responsibility of the user. Chapters should be in all caps. There is no logic for splitting very long titles across multiple lines, so consider keeping chapter and section titles short enough to fit on a single line.

2.2.1 Nomenclature

There is logic for automatically compiling a `nomenclature` page. If you want something Listed in the Nomenclature (LITN), then use the `\nomenclature` command the first time it appears in your text. The auxiliary file for the nomenclature is not automatically generated, and you must manually create it when you require an updated nomenclature page (if you have a nomenclature) with `makeindex ms.nlo -s nomencl.ist -o ms.nls`.

2.2.2 Figures and Tables

The table of contents automatically uses the “short” caption option for the `caption` command (or the “full” one if the “short” one is not defined). However, the grad school requires that this matches the first sentence of your “*full*” caption. You must make sure that the “short” and the first sentence of the “full” captions agree.

Algorithm 1 Localized Classifier Decision Surface Projection

```
given  $A, K, X, q$   
 $y \leftarrow q$   
repeat  
   $f_q \leftarrow A_{K(q,X)}$   
   $y \leftarrow \text{proj}(y, DS(f_q))$   
until convergence  
return  $y, f_q$ 
```

If you have some class of object in your thesis that is like “figure”s and “table”s but isn’t quite them, the grad school may let you have a separate list in the table of contents for those things. For example, in computer science you may have a bunch of “algorithms” that you want to make a list of, or in math you may want a list of “theorems”. There is logic in the class file for automatically creating a list of algorithms. That logic should be easily repurposed/extended to arbitrary types of things, depending on your field. See the `alg` command in the `userresponsibilities.tex` file (this file), and also in the class file for a starting point.

2.2.2.1 Subsubsubsubsections

The logic for nested sections is defined down to the `subsubsection` (3rd level) division. If you have `subsubsubsubsubsections` in your thesis, consider adding the appropriate spacing logic to the class file.

2.3 Citations

Some pointers on the use of et al., as there are options. You can list all authors (3 or more) for the first citation of the specific authors in your paper and then use the first authors name, et al., for the subsequent citations for the particular authors. If there are only two authors, you must list both always. If there are 6 or more authors, you can use et al. for the first and subsequent citations. If you start

your paper using et al. for 3 or more authors, you must do so consistently throughout the paper, regardless of it being the first citation.

There are several different ways to format your references. You must follow a specific and acceptable formatting style. The Graduate School highly recommends using available software to help you keep track of your references. Most software will export citations into bibtex format as a `.bib` file. After properly including your citations [1], the `bibtex` command will properly arrange all of your citations for inclusion in the references section.

REFERENCES

REFERENCES

- [1] L. Bottou and V. Vapnik, “Local learning algorithms,” *Neural Computation*, vol. 4, no. 6, pp. 888–900, 1992.

APPENDIX

Appendix A

First Appendix Title

Copy and paste the image of your IRB approval form in your appendix section. You may also place any other supporting documentation in your appendix section.

BIOGRAPHICAL SKETCH

BIOGRAPHICAL SKETCH

Christopher Scott Brown was born and raised in Mobile, AL. He received his B.S and M.S in Mathematics, and PhD in Computing from the University of South Alabama.

You may also use a tabular format for the biographical sketch. See the `bio/alternatebio.tex` file to see how such a thing would be laid out.