

Electrical and Computer Engineering

Comparing Multi-Step Load Forecasting Approaches

Proposal in partial fulfilment of the MScE

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Table of Contents

[1 Focus 1](#_Toc43977951)

[2 Investigation 2](#_Toc43977952)

[3 Contributions 2](#_Toc43977953)

[1 Styles 1](#_Toc43977954)

[1.1 Regularly used styles 1](#_Toc43977955)

[1.2 Heading and Numbering 2](#_Toc43977956)

[2 Inserting Equations and Figures 3](#_Toc43977957)

[3 Referencing 3](#_Toc43977958)

[4 Title Page and Headers and Footers 4](#_Toc43977959)

Comparing Multi-Step Load Forecasting Approaches

Updated: 2020 Jun-25 by Tolulope Olugbenga

# Focus

// Make this as detailed as you can

// Try to make it about 5 pages

* Multi step load forecasting in context – What is it, and what makes it important. The difference between it and single step forecasting; and when one is more important or needed than the other. Different load forecasting horizons, and how they differ from one another.
* What makes an approach good and how do we measure it? (Detail the most used metrics (MAPE, MAE, RMSE…)). What are these metrics (Mathematically, …), and what do they tell you? What are the disadvantages or the limitations of using each metric?
* Different multi step forecasting approaches – Shallow (Jha et al., 2019) and deep approaches.
* How do you propose to solve the problem?

<Pose the research problem here – aim for 3 pages. Provide enough background information for the reader to understand why the problem exists, and why it is useful to solve – make sure you back up all your information with literature references. Conclude this section with a brief explanation about the approach you are researching to solve the problem.>

# Investigation

<Describe in some detail how you plan to investigate your approach to solving the problem – aim for 4 pages. Be specific about exactly what aspects of the approach are under examination, and provide as many details as you can about the approach. Include any details you can provide about planned simulations or experiments, including the factors which are being evaluated, and performance metrics used for evaluation. If you borrow simulation/experimental data or methods from previous research, be sure to reference them.>

# Contributions

<Briefly list what contributions are made by completing this work – aim for 1 page. Don’t focus on what you learn by completing the work; instead, focus on what researchers will learn by reading the work.>

Appendix A: How to use this Template

# Styles

Use this template to handle all of your formatting issues. They will ensure consistent fonts, spacing between sections etc. To select a particular style, open the *styles* pain as depicted below:

|  |
| --- |
|  |
| Figure 1: a) Where to find the Formatting Styles b) where to find ‘references’ to insert captions |

## Regularly used styles

Avoid using the Normal style. It is in place as a reference for other styles. Here is a list of regularly used text styles:

Body Text: your main text should be formatted with this style

Block Text: used to indent content from the left and right

Captions: Use Figure Captions, Table Captions and Equation Captions by navigating to: >references>insert caption>…

Nlists and BLists (for numbered and bulleted lists)

Heading 1

Heading 2

Heading 3

Specialty formats: Strong, Emphasis, Subtle Emphasis, Intense Emphasis

There are also a set of styles included in the list for one-time use:

Cover styles: Pretitle, Title, Subtitle, authorship…

Header and Footer

Table of Contents styles, TOC1, TOC2, and TOC3 (These are linked to Sections to automate your table of contents)

## Heading and Numbering

This is a bit tricky, but here is a brief explanation. Section Headings should be formatted according to Heading 1, Heading 2 and Heading 3 (Heading 2 and 3 are sub-heading formats). These styles are linked to the ‘list style’ called Headings so when you use a Heading style they are properly numbered.

|  |
| --- |
|  |
| Figure 2: Example of Properly formatted 5th section headings |

The template should apply the list style automatically, but if it doesn’t, when you select your first heading, go to the list style menu and select the Headings list style to apply it.

|  |
| --- |
|  |
| Figure 3: Where to find the List Style menu |

# Inserting Equations and Figures

Use the quick part tables to insert an equation or a figure. You can access these from the short cut icon indicated in Figure 1. When you navigate to this icon, it provides a list of tables. Use the Equation Table and the Figure Table as in the examples below: The first table is an equation table. The last column is an equation number, inserted by navigating to >references>captions>equation. The second table is a figure table. The last row is a combination of figure number with text describing the figure. To insert the number, navigate to >references>captions>Figure. Then add your text.

|  |  |  |
| --- | --- | --- |
|  | [use equation tool to place equation here] | ( 1 ) |

|  |
| --- |
| [place figure here] |
| [place caption here…if it is less than 1 line, center it] |

# Referencing

Use inline referencing according to IEEE referencing style [1, 2]. For instance, I have included the reference numbers after ‘IEEE referencing style’ and I will include a separate referencing section where I will list the sources in the order which I cite them. Use the *Rlist* style to create your reference list. If you want, you can automate their links with the inline citation by navigating to >references>cross-reference and choosing ‘Numbered Item’. Make sure you set ‘Insert Reference to’ paragraph number. The following are typical examples of items in a references list (I am not too particular about the detailed formatting in the citations, but include the standard information, and be consisten):

1. D Graffox (Sep-2009), IEEE Citation Reference, <http://www.ieee.org/documents/ieeecitationref.pdf>, last accessed, 2015-MAR-13.
2. (no author/date available), IEEE Citation Style, <http://library.queensu.ca/book/export/html/5846>, last accessed, 2015-MAR-13.
3. D MacIsaac, C Hrabi, “Our Favorite Topics”, Journal of Interesting Information, 1(24), 2010.

# Title Page and Headers and Footers

Don’t forget to update the standard content of each of these sections. Of special note is the #-of-pages field in the footer which should be updated manually at the completion of the document so that the Tite and Contents pages are not included. The Reference page should be included (even though it is NOT included in the page count of 10 pages). Also of special note are the ‘created’ and ‘updated’ fields on Title page AND in the footer. In the title page, these fields can be edited by double clicking them. In the footer they are linked to the title page fields through a cross-reference. To update them, simply double click them.

One final note – take a close look at the footer in this appendix compared to the footer in the main body. The paging is different in the appendix. This is because the appendix is a NEW SECTION and the footer for this section has been unlinked to the previous section. Be careful not to mess sections up, but if you do, you can reinstate them using >Page Layout>Breaks>(Section Break) next page. Another interesting thing about this Appendix is that its title uses the stye ‘Contents Heading’. If you don’t do this, it won’t show up in the table of contents properly.