The Essay Title goes here

Firstname Middlename Familyname (email@aims.ac.za)
African Institute for Mathematical Sciences (AIMS)

Supervised by: Title Firstname Lastname
Institute of Supervisor, Country

17 May 2012

Submitted in partial fulfillment of a postgraduate diploma at AIMS

Abstract

A short, abstracted description of your essay goes here. It should be about 100 words long. But write it last.

An abstract is not a summary of your essay: it's an abstraction of that. It tells the readers why they should be interested in your essay but summarises all they need to know if they read no further.

The writing style used in an abstract is like the style used in the rest of your essay: concise, clear and direct. In the rest of the essay, however, you will introduce and use technical terms. In the abstract you should avoid them in order to make the result comprehensible to all.

You may like to repeat the abstract in your mother tongue.

Declaration

I, the undersigned, hereby declare that the work contained in this essay is my original work, and that any work done by others or by myself previously has been acknowledged and referenced accordingly.

Firstname Middlename Lastname, 26 October 2012

Contents

1. Introduction

Explain the context of your essay topic, so that the topic itself appears motivated, natural and important.

Paragraphs are separated by blank lines in the LaTeX code, and the line spacing, paragraph indentation, and paragraph spacing are set in the preamble for you, according to AIMS house style.

This is a textual citation Shannon (1993). And this is a parenthetical citation (Shannon, 1993). You probably want to use the latter more often.

1.1 Moving On

Let's demonstrate a figure by looking at Fig. 1.1.

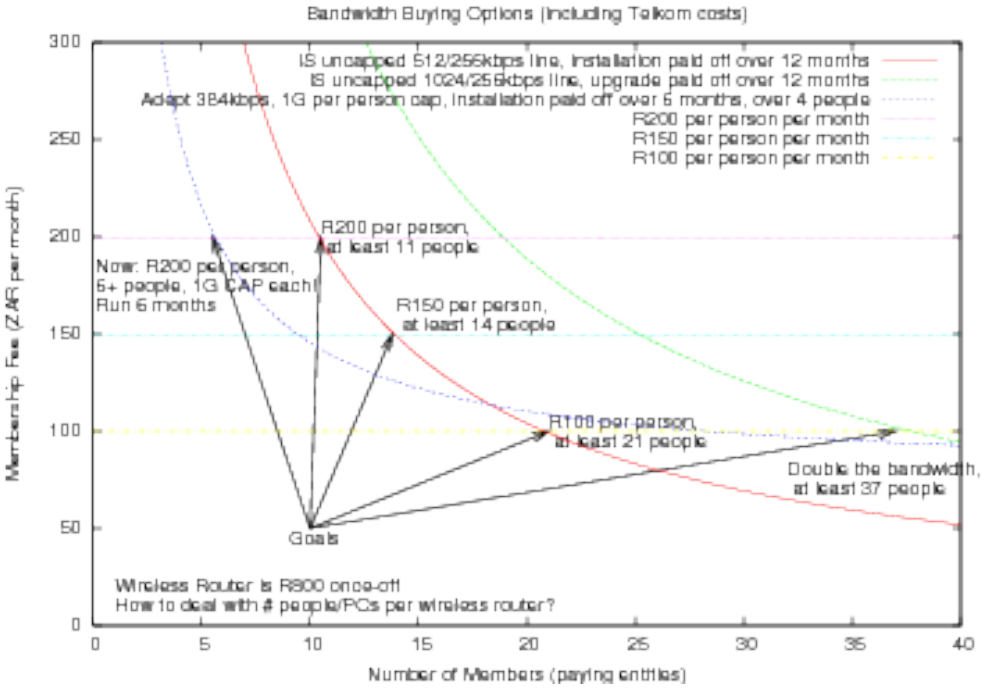

Figure 1.1: Planning community bandwidth sharing costs. Note caption capitalization.

Remember how to include code with `verbatim` and to fix the tabs in python in a verbatim environment? It may be best to have an 'include' command for code, not to have to re-edit it all the time.

```
# This program prints hello

import Scipy as S

if __name__ == "__main__":
        print "hello"
```

2. The Second Chapter

Text text text text text text text text text text text text text text text text text text text text text text text text text text text text.

When you get stuck, don't panic. The world is unlikely to end just now. Remember you can consult your supervisor, tutor, Frances, Jan, and Jeff and Barry at agreed times.

2.0.1 Theorem (Jeff's Washing Theorem)**.** *If an item of clothing is too big, then washing it makes it bigger; but if it is too small, washing it makes it smaller.*

Proof. Stated without proof. But a proof would look like this. □

Notice that no Lemmas are required in the proof of Theorem 2.0.1.

3. Third Chapter

Theorems before the chapter's first section will be dot-zero, and their numbering is completely wrong. You can avoid this by simply always starting a chapter with a section. Ta Da! It will probably help you structure your essay anyway.

3.0.2 Theorem (My Theorem2). *This is my theorem2.*

Proof. And it has no proof2. □

3.1 See?

Text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text.

3.1.1 Theorem (My Theorem2). *This is my theorem2.*

Proof. And it has no proof2. □

Text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text.

$$x = y + y \tag{3.1.1}$$
$$= 2y \tag{3.1.2}$$

see equations 3.1.1 and 3.1.2

3.2 More

Here's a conjecture

3.2.1 Conjecture. The washing operation has fixed points.

and here's an example

3.2.2 Example. 5 Rand coin.

4. The Second Squared Chapter

An average essay may contain five chapters, but I didn't plan my work properly and then ran out of time. I spent too much time positioning my figures and worrying about my preferred typographic style, rather than just using what was provided. I wasted days bolding section headings and using double slash line endings, and had to remove them all again. I spent sleepless nights configuring manually numbered lists to use the LaTeX environments because I didn't use them from the start or understand how to search and replace easily with texmaker.

Everyone has to take some shortcuts at some point to meet deadlines. Time did not allow to test model B as well. So I'll skip right ahead and put that under my Future Work section.

4.1 This is a section

Text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text text.

Some essays may have 3, 5 or 6 chapters. This is just an example. More importantly, do you have at most 25 pages? Luck has nothing to do with it. Use the techniques suggested for writing your essay.

Now you're demonstrating pure talent and newly acquired skills. Perhaps some persistence. Definitely some inspiration. What was that about perspiration? Some team work helps, so every now and then why not browse your friends' essays and provide some constructive feedback?

Acknowledgements

This is optional and should be at most half a page. Thanks Ma, Thanks Pa. One paragraph in normal language is the most respectful.

Do not use too much bold, any figures, or sign at the bottom.

References

Alan Adolphson, Steven Sperber, and Marvin Tretkoff, editors. *p-adic Methods in Number Theory and Algebraic Geometry*. Number 133 in Contemporary Mathematics. American Mathematical Society, Providence, RI, 1992.

Alan F. Beardon. From problem solving to research, 2006. Unpublished manuscript.

M. C. Davey. *Error-correction using Low-Density Parity-Check Codes*. Phd, University of Cambridge, 1999.

Leslie Lamport. *LaTeX: A Document Preparation System*. Addison-Wesley, 1986.

D. J. C. MacKay. Statistical testing of high precision digitisers. Technical Report 3971, Royal Signals and Radar Establishment, Malvern, Worcester. WR14 3PS, 1986a.

D. J. C. MacKay. A free energy minimization framework for inference problems in modulo 2 arithmetic. In B. Preneel, editor, *Fast Software Encryption (Proceedings of 1994 K.U. Leuven Workshop on Cryptographic Algorithms)*, number 1008 in Lecture Notes in Computer Science Series, pages 179–195. Springer, 1995b.

D. J. C. MacKay and R. M. Neal. Good codes based on very sparse matrices. Available from www.inference.phy.cam.ac.uk, 1995.

C. E. Shannon. A mathematical theory of communication. *Bell Sys. Tech. J.*, 27:379–423, 623–656, 1948.

C. E. Shannon. The best detection of pulses. In N. J. A. Sloane and A. D. Wyner, editors, *Collected Papers of Claude Shannon*, pages 148–150. IEEE Press, New York, 1993.

Web12. Commercial mobile robot simulation software. Webots, www.cyberbotics.com, Accessed April 2013.

Wik12. Black scholes. Wikipedia, the Free Encyclopedia, http://en.wikipedia.org/wiki/Black%E2%80%93Scholes, Accessed April 2012.