A Thesis Title

Author Name

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
of
University College London.

Department of Something
University College London

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I, Author Name, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the work.

Abstract

My research is about stuff.

It begins with a study of some stuff, and then some other stuff and things.

There is a 300-word limit on your abstract.

Impact Statement

UCL theses now have to include an impact statement. *(I think for REF reasons?)* The following text is the description from the guide linked from the formatting and submission website of what that involves. (Link to the guide: `http://www.grad.ucl.ac.uk/essinfo/docs/Impact-Statement-Guidance-Notes-for-Research-Students-and-Supervisors.pdf`)

> The statement should describe, in no more than 500 words, how the expertise, knowledge, analysis, discovery or insight presented in your thesis could be put to a beneficial use. Consider benefits both inside and outside academia and the ways in which these benefits could be brought about.
>
> The benefits inside academia could be to the discipline and future scholarship, research methods or methodology, the curriculum; they might be within your research area and potentially within other research areas.
>
> The benefits outside academia could occur to commercial activity, social enterprise, professional practice, clinical use, public health, public policy design, public service delivery, laws, public discourse, culture, the quality of the environment or quality of life.
>
> The impact could occur locally, regionally, nationally or internationally, to individuals, communities or organisations and could be immediate or occur incrementally, in the context of a broader field of research, over many years, decades or longer.
>
> Impact could be brought about through disseminating outputs (either in scholarly journals or elsewhere such as specialist or mainstream media),

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Further information including a searchable list of hundreds of examples of UCL impact outside of academia please see `https://www.ucl.ac.uk/impact/`. For thousands more examples, please see `http://results.ref.ac.uk/Results/SelectUoa`.

Acknowledgements

Acknowledge all the things!

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Chapter 1

Introduction

Some stuff about things.[1] Some more things.

Inline citation: Anne Author. Example Journal Paper Title. *Journal of Classic Examples*, 1(1):e1001745+, January 1970

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Chapter 2

Contur Overview

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Chapter 3

Profiling Contur

This chapter will outline how we went about performing a profile of contur. We will start by introducing cProfile, which was used to carry out the profile. Then we will discuss Snakeviz and gprof2dot, these are the two tools which we used to visualize the profiling results produced by cProfile. Finally we will conclude the section by performing an initial profile of the contur package before any code optimization was attempted. This initial profile will serve as our benchmark to measure the effectiveness of our later attempts to improve the run time performance of contur.

3.1 Profiling with cProfile

3.1.1 Why cProfile?

Before discussing cProfile it might be helpful to first consider what features we ideally require from a profiler to make are task of improving the performance of contur easier. At a minimum a profiler must obviously be able to time how long it takes our code to run. This basic requirement is essential to be able to determine if our attempted improvements to the code do in fact actually improve run performance. In addition to just providing the total run time of our program we would also like our profiler to provide a split of this runtime between the component parts which compose the program. This requirement is especially important for a large code base like contur which is being profiled by someone not involved in the development of the code base.

cProfile is a module within the Python standard library which provides a profiler

which meets all our requirements for a profiler, in addition it provides other useful features. Our main motivations for using cProfile are as follows:

1. Provides a full profile of program with output include total run time, time taken at each individual step, and number of calls to individual functions;
2. Easy to save the output of the profile in pstat files which can then be read by tools built to visualize profiling results;
3. Performing the profile with cProfile is quick and easy and requires minimal new code;

3.1.2 Using cProfile

cProfile is simple to use, this can be seen by considering the most straightforward profile of contur we can do using cProfile's run function. We can

```
from brg.datastructures import Mesh


mesh = Mesh.from_obj('faces.obj')
mesh.draw()
```

3.2 Visualizing Profiling Results

3.3 Initial Profile Results

dd

Chapter 4

Optimising Contur

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Chapter 5

Testing Contur

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Chapter 6

General Conclusions

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Appendix A

An Appendix About Stuff

(stuff)

Appendix B

Another Appendix About Things

(things)

Appendix C

Colophon

This is a description of the tools you used to make your thesis. It helps people make future documents, reminds you, and looks good.

(example) This document was set in the Times Roman typeface using LaTeX and BibTeX, composed with a text editor.

Bibliography

[1] Anne Author. Example Journal Paper Title. *Journal of Classic Examples*, 1(1):e1001745+, January 1970.