

UNIVERSITY OF KHARTOUM

GeiodApp: A Unified Framework for Geoid Computations

by

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degree of Doctor of Philosophy

in the
Faculty of Engineering
Surveying Engineering

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Declaration of Authorship

I, Mohamed Yousif and Mohamed Jaafar, declare that this thesis titled, ‘GeoidApp: A Unified Framework for Geoid Computations’ and the work presented in it are my own. I confirm that:

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- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

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Abstract

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Figure of the earth remains one of the most crucial aspects of geodesy. Modern studies of the figure of the earth have started with Gauss [?] who call it ‘geoid’. The geoid according to Gauss is the surface that approximates the sea level. Another approach of describing the figure of the earth was proposed by Molodnskey [?]. His proposal was to treat the earth’s figure as ‘a boundary value problem’. We’re interested in the later approach as we believe that it’s economically feasible, yet accurate enough.

Acknowledgements

The acknowledgements and the people to thank go here, don't forget to include your project advisor...

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Abbreviations

LAH List Abbreviations **Here**

Physical Constants

Speed of Light $c = 2.997\,924\,58 \times 10^8 \text{ ms}^{-\text{s}}$ (exact)

Symbols

a	distance	m
P	power	W (Js^{-1})
ω	angular frequency	rads^{-1}

For/Dedicated to/To my...

Chapter 1

Introduction

The structure of the thesis is as follows

- In section 1 we will briefly talk about the two approaches of describing the earth's figure, we will also make comparisons in terms of the accuracy and the difficulties of applying each method
- Section 2 will discuss the mathematics behind the geoid and we will derive it's formula
- In Section 3 will talk about the satellite missions that made computing the geoid from Molodnksey method work
- In chapter 4 will contain the results of our work evaluated on local data, and other dataset
- Appendix A

In particular our contribution is

- Provide a general framework for geoid computations that is very easy to be used on mobile devices yet efficient

1.1 Figure of the Earth

Modeling the earth remains one

1.1.1 A Subsection

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1.2 Another Section

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Appendix A

An Appendix

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