

Senior Research

# Title of Your Thesis

Final Report

Your Name  
Center for Imaging Science  
Rochester Institute of Technology  
May 2005

Copyright © 2005  
Center for Imaging Science  
Rochester Institute of Technology  
Rochester, NY 14623-5604

This work is copyrighted and may not be reproduced in whole or part without permission of the Center for Imaging Science at the Rochester Institute of Technology.

This report is accepted in partial fulfillment of the requirements of the course 1051-503 Senior Research.

Title: Your thesis title.  
Author: Your name  
Project Advisor: Your advisor's name  
1051503 Instructor: Joseph P. Hornak

# Title of Your Thesis

Your Name

Center for Imaging Science  
Rochester Institute of Technology  
Rochester, NY 14623-5604

Date

## **Abstract**

This section should contain a 100 to 200 word *advertisement* of your thesis. The abstract should concisely describe the salient hypotheses, procedures, results, and conclusions presented in your research. If you have done it correctly, your abstract should address the following five questions. Why was the research performed? What was done or known previously? What did you attempt and accomplish? What can be concluded from your results? See any abstract in the scientific literature as an example.

## **Acknowledgement(s)**

You may acknowledge financial support for your thesis from a funding agency or person; our advisor; and help of a friend, parent, or spouse in this section. This section is optional.

## Table of Contents

---

Copyright Release	i
Abstract	ii
Acknowledgement (Optional)	iii
Table of Contents	iv
Table of Figures (Optional)	v
Table of Tables (Optional)	vi
Table of Symbols and Abbreviations (Optional)	vii
Introduction	1
Background	2
Theory	3
Subpart 1	
Subpart 2	
Scientific Methods	4
Subpart 1	
Subpart 2	
Subpart 3	
Results	5
Subpart 1	
Subpart 2	
Subpart 3	
Discussion	6
Conclusions	7
References	8
Appendix A. (Optional)	
Appendix B (Optional)	

## Table of Figures

## Table of Tables

## Table of Symbols and Abbreviations

Symbol	Definition
A	Anterior
Å	Angstrom ( $10^{-10}$ meters)
B <sub>0</sub>	Static magnetic field
B <sub>1</sub>	The radio frequency magnetic field
C	Contrast
CW	Continuous wave
E	Energy
FID	Free induction decay
FT	Fourier transform
G <sub>BP</sub>	Bipolar magnetic field gradient
ADC	apparent diffusion coefficient
AST	arterial spin trapping
BOLD	blood oxygenation level-dependent contrast
CSI	chemical shift imaging
DWI	diffusion weighted imaging
EPR	electron paramagnetic resonance
ESR	electron spin resonance
MR	magnetic resonance
MRS	magnetic resonance spectroscopy
PRESS	point resolved spectroscopy
SI	spectroscopic imaging
STEAM	stimulated echo acquisition mode

## **Introduction**

This section will introduce the problem and project. This section should have the most number of references. References should be handled in the following way. In your text define a reference with either a number like this (1) or a superscript,<sup>1</sup> or a name and year (Smith, 2003). If Smith has two publications in 2003 you referenced, use 2003a and 2003b. Note that the references are used in order and if a reference is referred to a second time, the same number is used (if using numerical format).

## **Background**

This section will be very similar to your proposal, provided you have not changed the direction of your thesis.

## **Theory**

This section contains any theory you had to derive or feel the reader should know in order to appreciate your results. Some theses will require a theory section and others will not. Those that do not usually have related material in the background section.

### **Theory Part 1**

### **Theory Part 2**

## **Experimental Methods**

This section contains the major experimental procedures you used to test your hypothesis. It will have diagrams for any special instrumentation you used.

### **Experimental Methods Part 1**

### **Experimental Methods Part 2**

### **Experimental Methods Part 3**

## **Results**

This section should contain the results or data you obtained from your research. Please use include a discussion of the errors associated with your results and the certainty of your results. For example, write the transmittance is  $0.75 \pm 0.01$  not just 0.75.

### **Results Part 1**

### **Results Part 2**

### **Results Part 3**

## **Discussion**

You want to discuss each of the results you obtained and their significance. Do they support your thesis or not? Relate these to the background section and state how your results advanced the knowledge of the field. Discuss possible sources or errors in your results.

## Conclusions

Conclusions from your research.

## References

1. L.M. Fletcher, J.B. Barsotti, J.P. Hornak, A Multispectral Analysis of Brain Tissues, *Magn. Reson. Med.* **29**:623-630, (1993).
2. D. Kean, M. Smith, *Magnetic resonance Imaging Principles and Applications*. Williams & Wilkins, Baltimore, 1986. (ISBN 0-683-04554-7)
3. L.M. Fletcher and J.P. Hornak, "Multispectral Image Segmentation in Magnetic Resonance Imaging," in *Digital Image Processing Methods*, ed. by E. Dougherty, (Marcel Dekker, NY 1994).
4. L.M. Fletcher, J.B. Barsotti, J.P. Hornak, Multispectral Brain Tissue Classification, 11<sup>th</sup> Annual Meeting of The Society for Magnetic Resonance in Medicine, Berlin, Germany, August 1992.
5. J.P. Hornak, *The Basics of MRI, A hypertext book on magnetic resonance imaging*. Copyright © 2005 J.P. Hornak. <http://www.cis.rit.edu/htbooks/mri/> .
6. S.D. Szeglowksi, J.P. Hornak, and RIT. *Resonator for Magnetic Resonance Imaging of the Wrist* U.S. Patent #5,542,424. 6 Aug. 1996.

For referencing by name, list alphabetically by first author's last name.

## **Appendix A – Title of this appendix.**

An appendix usually contains information you would not wish to include in the text because some readers may not be interested in the detail. This might include a mathematical derivation or computer code.