

MASTER'S THESIS

Real time image processing in optical microscopy

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Real Time Image Processing
in
Optical Microscopy

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ABSTRACT

Low coherence interferometry (LCI) is an interferometric technique using low coherence light for illumination. It has been receiving a lot of attention in many research fields. One of the recent applications of LCI is in optical coherence tomography (OCT).

The OCT technology is inherently non-invasive and can provide high depth resolution rendering it as a powerful tool in 3-D imaging. One of the main difficulties in LCI is in alignment, i.e. the problem in locating the interferograms. Current practice side steps this problem by recording a series of images of a test object and then performs post-processing of the data to locate the interferograms thereby to generate a 3-dimensional image of the test object.

This is not an efficiency way in practice as the result can only be obtained after a length of time in taken to scan the object, which may take several minutes or even hours.

In my project, the interferograms captured with the interferometer is done in real-time. Once interference patterns is detected, the interferograms are then recorded where post-processing of the interferograms can be performed. This made the whole process much more convenient and less time consuming.

TABLE OF CONTENTS

Declaration	i
Abstract	ii
Acknowledgement	iii
Table of Contents	iv
List of Figures	vi
List of Tables	viii
List of Abbreviations	ix
Chapter 1. Introduction	1
1.1 Motivation	1
1.2 Objectives	2
Chapter 2. Theory	4
2.1 Wave Properties of Light	4
2.1.1 Coherence	4
2.1.1.1 Temporal Coherence	5
2.1.1.2 Spatial Coherence	6
2.1.2 Polarization	8
2.1.3 Interference	9
2.2 Optical Interferometer	12
2.2.1 Michelson Interferometer	13
2.2.2 Low Coherence Interferometer	14
2.3 Optical Fibre	17
2.3.1 Spatial Filter	18
2.4 Digital Signal Processing	19
2.4.1 Programmable Digital Signal Processors (DSPs)	19
2.4.2 Advantages of digital system	21
Chapter 3. Experimental Setup and Techniques	22
3.1 Light Source – Superluminescent Diodes	22
3.2 Charge-Coupled Device (CCD)	23
3.3 One-dimensional Precision Stepper	25
3.4 Optical Platform	27
3.5 Optical Setup	29
3.6 Digital Signal Processing System	29
3.6.1 Motherboard – MADSP	31
3.6.2 Preprocessing Board – MDSP	33
3.6.3 Video Processing Board – VADSP	36
3.7 Experimental Procedures	39
3.8 Software	40
3.8.1 Assembly Program	41
3.8.2 CVI Program	42

Chapter 4. Results	46
4.1 Output Display of Video Board	47
4.2 Original Interferograms	49
4.3 Processed Interferograms	51
4.4 Two-dimensional Result Image	53
4.5 Three-dimensional Result Image	55
Chapter 5: Discussions	65
5.1 Stabilization	65
5.2 Experimental Resolution	66
5.3 Limitations of Our System	70
Chapter 6: Conclusions and Further Development	71
6.1 Conclusions	71
6.2 Further Development	71
References	73
Appendix A. Display Panels of CVI program	74
Appendix B. Program List	77
B.1 Assemble video program for VADSP (main)	77
B.2 Assemble video program for VADSP (supplementary)	91
B.3 Assemble program for MDSP	110
B.4 CVI program for PC (main)	112
B.5 CVI program for PC (supplementary)	133
Appendix C. Standards of color television broadcast system	149
Curriculum Vitae	151