**TABLE OF CONTENTS**

ACKNOWLEDGEMENT i

ABSTRACT ii

TABLE OF CONTENTS iii

LIST OF FIGURES iv

LIST OF TABLES v

**CHAPTER TITLE PAGE**

1. INTRODUCTION
2. Introduction
3. Different Approach to Video Stabilization
   * 1. Mechanical Video Stabilization Technique
     2. Optical Video Stabilization Technique
     3. Digital Video Stabilization Technique
4. Motivation
5. Problem Statements
6. Aim and Objectives
7. Scope of Thesis
8. Outlines of Thesis

2 DIGITAL VIDEO STABILIZATION

1. Introduction
2. Motion Estimation
3. Principal Types of Motion Models
   1. Translation Transformation
   2. Euclidean Transformation
   3. Similarity Transformation
   4. Affine Transformation
   5. Homography Transformation
4. Direct Motion Estimation Technique
5. Indirect Motion Estimation Technique
6. Field Programmable Gate Array(FPGA)
   * 1. FPGA Architecture
     2. Usage of FPGA
     3. Programming Steps of FPGA
     4. Programming Language and Tools

3 VIDEO STABILIZATION VIA POINT FRATURE METHOD

1. Introduction
2. Input Unit
3. Processing Unit
4. Reading Video Frames
5. Salient Points Collection

3.3.2.1. Features from accelerated segment test (FAST)

3.3.2.2. Feature Detection using FAST

1. Correspondences Selection between Points
2. Transform Estimation from Noisy Correspondences
3. Random Sample Consensus(RANSAC)
4. Transform Approximation and Smoothing
5. Running the Full Video
6. Output Unit
7. PYNQ Overlays

4 SIMULATION AND IMPLEMENTATION OF VIDEO STABILIZATION ON MATLAB, PYTHON AND FPGA

1. Simulation Structure in MATLAB
2. Read Frames from a Movie File
3. Collect Salient Points from Each Frame
4. Select Correspondences Between Points
5. Estimating Transform from Noisy Correspondences
6. Transform Approximation and Smoothing
7. Run on the Full Video

5 CONCLUSION AND FUTURE WORK

5.1. Conclusions

5.2. Future Work

REFERENCES

APPENDIX A

APPENDIX B

APPENDIX C