Face Detection on the GPU

Phil Monroe and Kramer Straube

Mar. 15, 2012

Abstract

In this paper, we implemented the beginnings of the Viola-Jones object detection method as it applies to faces. We also added a single feature classifier to detect the presence of glasses. To implement this on the GPU, we first find the integral image which is done serially because it is faster. Then, we cascade our identifiers and apply them using the integral image to minimize memory accesses. Finally, we present the list of our hypotheses for the location of the face back to the CPU. INSERT SOME JUNK ABOUT RESULTS HERE

1 Introduction

In this paper, we will address the application of face detection on the GPU. We used the Viola-Jones Object Detection algorithm to detect faces. We also added a glasses identifier to make an attempt at detecting whether the faces detected had glasses or not. We tested our algorithm on a subset of the Caltech Faces database and a subset of the (OTHER CALTECH IMG LIB) to analyze how accurate our implementation was. Finally, we discuss the pros and cons of the implementation as well as some notable aspects of our specific implementation.

2 Viola-Jones Object Detection

Stuff goes here

2.1 Integral Image

2.2 Cascade of Identifiers

text and figure of our identifiers

2.3 Glasses Identifier

text and figure of our glasses identifier

3 Results and Discussion

Stuff goes here

4 Conclusion

Conclusion goes here

References

- **EEC 277 Lectures 1+2 plus slides.**
- **David Luebke and Greg Humphrey - How GPUs Work**
  `http://bit.ly/hHt4VH`