

Image (and Video) Coding and Processing
Computer Project 3, Due Date: April 26, 2006
Spring 2006

Project Description

In this project you will study motion compensation for video compression. There will be two pieces to this project.

Part I:

First, you are to implement a collection of motion estimation schemes and apply them to the test data I provide. In particular, you should implement

1. Exhaustive search
2. Three-step search
3. Your own scheme (this is intended to allow your team to try to come up with their own idea for estimating motion vectors)

Following the implementation, you should form the motion compensated frame as well as the difference between the real n th frame and the motion compensated n th frame. In your report, you should describe your observations regarding the performance of these methods.

The test images for this assignment can be downloaded from:

<http://www.winlab.rutgers.edu/~trappe/Courses/ImageVideoS06/foreman.zip>

For this part of the assignment, you should use the first two frames of the foreman sequence in order to estimate the motion vectors.

Part II

In this part of the project, you are to run an MPEG compression program on the entire FOREMAN video sequence. Your task is to try MPEG under different configurations (e.g. "IBBPBBP...", or different motion estimation schemes). You should use this as a means to validate your motion estimation implementation from Part I.

You should find your own implementation of MPEG (it may need to be in C). As a starting point, I suggest looking for the Berkeley implementation, or even the mpegwrite script for MATLAB.

What to Turn In

Collectively, your team should write up a report that summarizes your experiences, and observations.