

# Advanced Vision Assignment 1

Moataz Elmasry and Monica Paun

February 13, 2014

## **Abstract**

In this report, we outline our attempt at identifying and tracking a set of marbles moving across a fixed featureless background. The first section of the report discusses the detection of the marbles in each individual frame, the second section discusses the tracking of the marbles across consecutive frames, and the third and final section evaluates our results against the ground truth results. For each of the tasks, we describe the algorithm used, and its performance.

# Chapter 1

## Marble Detection

### 1.1 Algorithm

#### 1.1.1 Object-oriented Approach

#### 1.1.2 Background Subtraction

#### 1.1.3 Post-processing

#### 1.1.4 Marble Identification

### 1.2 Performance Analysis

Normalized vs non-normalized

#### 1.2.1 Successful Detections

#### 1.2.2 Unsuccessful Detections

## Chapter 2

# Marble Tracking

### 2.1 Algorithm

### 2.2 Performance Analysis

Normalized vs non-normalized

#### 2.2.1 Successful Detections

#### 2.2.2 Unsuccessful Detections

## Chapter 3

# Final Evaluation and Discussion