

## Lotto-bot

Final Project Proposal, EE 368 Digital Image Processing, Spring 2012

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### **Description**

Americans spent \$60 billion on lotteries in 2008 which turned out to be a whopping average of \$525 for each household. Not only do Americans spend a lot on lotteries they go crazy for it. When the jackpot for the Mega Millions hit \$656 million in April of 2012, people lined up in huge lines with some spending thousands of dollars on tickets. Manually checking so many tickets for a winning combination is almost impossible, and taking the tickets to a lottery store to be checked is not only inconvenient, but it also eliminates the possibility of remaining anonymous. Our proposal is to develop a camera based lottery ticket application (Lotto-bot) that can detect and determine whether the ticket has won a prize.

The application will allow the user to point an Android based mobile phone camera at the ticket and determine whether the ticket is a winner.

### **Features**

The key features of this application will be:

- 1) Recognize California "Super Lotto" and "Mega Millions" tickets.
- 2) Determine the date of the play.
- 3) Recognize up to ten sets of numbers per ticket.
- 4) Recognize whether there is a mega or special number.
- 5) Determine whether the ticket has won a prize.

The application will perform the above tasks with very high accuracy in the following conditions:

- 1) All reasonable lighting conditions for a mobile phone camera.
- 2) Crumpled or folded lottery tickets.
- 3) Reasonably stained tickets (i.e. coffee)
- 4) Reasonably scribbled tickets.

There are some extra features we would like to implement if we have time:

- 1) Automatically detect lottery tickets from all states and all types.
- 2) Generate error/warning messages if application cannot determine the numbers.
- 3) Process up to 4 lottery tickets at the same time in a 2x2 matrix, and extract up to 40 numbers.
- 4) Keep a database of numbers played and winnings locally on the application.

### **Implementation**

We plan to develop the application on a Motorola Droid phone. For algorithms which are already not available in OpenCV, we will use Matlab to develop the algorithms before porting them to the phone.

The high level algorithm we will use is:

- 1) Pre-processing
  - a) Image scaling
  - b) Otsu's method
  - c) Image segmentation
- 2) Optical Character Recognition
- 3) Comparison of the recognized numbers with winning number database from internet

## ***References:***

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