Assignment 3 – Extending the $N Recognizer
CAP6105

Due: 10/14/13 11:59pm

This purpose of this assignment is twofold. First, it is designed to give you experience with a simple recognizer. Second, it is to give you experience in implementing a state of the art algorithm from a research paper and to extend the algorithm to improve upon it.

Requirements

There are two main requirements for this assignment. First, you will implement the $N recognizer, a basic recognition algorithm for recognizing multi-stroke symbols that was published in Graphics Interface 2010.

Anthony, L. and Wobbrock, J.O. (2010). A lightweight multistroke recognizer for user interface prototypes. *Proceedings of Graphics Interface (GI '10).* Ottawa, Ontario (May 31-June 2, 2010). Toronto, Ontario: Canadian Information Processing Society, pp. 245-252.

Second, you will improve upon this algorithm to try to improve the accuracy. Your approach can be based on any strategy you want including machine learning methods, heuristic methods, etc…

Your symbol recognizer must be able to recognize the following symbols:

0,1,2,3,4,5,6,7,8,9,+,-,*,t,a,n,s,c,i, and the square root symbol.

You should use your scribble erase from the last assignment to erase symbols.

Train your recognizer with 1,3, and 5 samples per symbol. Test the recognizer by writing each symbol 5 times, which should give you a good accuracy number. You should run separate experiments using the data you collected using the stylus and the touch screen with a finger. Please put the results of your experiment in the README file.

Strategy

To implement your symbol recognizer, there are some things you need to consider.

1. You need to find a way to invoke the recognizer. You can have it run in real time or in batch mode (for ex. lassoing the symbol or symbols and taping to invoke the recognizer).

2. Regardless of the invocation method, you will need some form of ink segmentation since you must be able to detect when a symbol has 2 or more strokes. Simple line segment intersection should suffice here since it is relatively easy to determine if you have a multi-stroke symbol in our alphabet.

3. You will need to show recognition results to the user. A simple text box is fine but if you want to be more elaborate feel free to do so.

Deliverables

You place your source on the ISUE Lab drive and include a README file describing what works and what does not, the results of your experiments, any known bugs, and any problems you encountered.

Grading

Grading will be loosely based on the following:

50% correct implementation of the $N recognizer
30% extending the $N recognizer to improve accuracy
20% documentation