

# Requirements Document

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## 1 Program Input

1. User must select one or more image files containing handwriting to load
  - (a) Image can contain one or more words
  - (b) Words should be in top down, left to right format
  - (c) Image can be in any common image format such as jpeg, png, windows BMP, GIF, etc.
  - (d) Image must be no greater in size than 200MBytes
2. User can optionally select one or more text file to be loaded for training or testing purposes
  - (a) Document should be in ASCII or Unicode format
  - (b) Document should have the same number of lines as the loaded image
  - (c) Each line in the loaded image file should match a line in the text document
  - (d) Each word in a line of the text document should match the word in the same position in the image file
  - (e) There should be one text file for each image file used

## 2 User Options

1. Algorithm options
  - (a) User can select one or more algorithms to be used in word recognition
  - (b) User can modify the order in which the algorithms are run and how they are combined
  - (c) Software will manage algorithm compatibility (user won't be able to select incompatible algorithms)
2. Logging options
  - (a) User can enable/disable performance logging
  - (b) User can set the output destination directory
    - i. Log file name base name should be the same as the loaded image file's base name (image.png becomes image.txt)

- (c) User can modify the logging detail level
- 3. Preprocessing options
  - (a) User can select one or more preprocessing algorithms
  - (b) User can modify the order in which the algorithms are run on the input image and how they are combined
  - (c) Software will manage algorithm compatibility (user won't be able to select incompatible algorithms)
- 4. Training options
  - (a) User can select one or more training algorithms
  - (b) User can modify the order in which the algorithms are run and how they are combined
  - (c) Software will manage algorithm compatibility (user won't be able to select incompatible algorithms)
- 5. Recognition options
  - (a) User can select confidence threshold
- 6. Testing options
  - (a) User can select the number of tests to execute
  - (b) User can select one or more recognition algorithms to be used for each test
  - (c) User can modify the order in which the algorithms are run on the input image and how they are combined for each test
  - (d) User can specify the destination directory of output log file

### **3 Training Mode**

- 1. Training
  - (a) Program will execute the Recognition mode using just the image of handwritten text as input
  - (b) Program will examine each word image and gather certain attributes of the image
  - (c) Program will store the images and attributes extracted using the corresponding word from the text file as the index of the data

### **4 Recognition Mode**

- 1. Recognition
  - (a) Program will extract each word from the image file as individual images

- (b) Program will examine each word image and apply recognition algorithms to attempt to recognise word
  - (c) Program will store recognised word for program output
2. Feedback
    - (a) Program will highlight the current word it is working on
    - (b) When the program suspects that a the current word is incorrectly matched with the corresponding word in the text file it will prompt user for input on what the word is

## 5 Testing Mode

1. Recognition
  - (a) Program will execute the Recognition mode using the image of hand-written text as input
  - (b) Program will compare the matching text file with the text file derived from Recognition to determine accuracy of the algorithms used in Recognition
  - (c) Program will output relative performance of the algorithms used in Recognition
2. Feedback
  - (a) Program will highlight the current word it is working on
  - (b) When the program suspects that a the current word is incorrectly matched with the corresponding word in the text file it will prompt user for input on what the word is

## 6 Program output

1. Program will output one text file for each input image
  - (a) Text file will be in Unicode format
  - (b) Line endings will be the default for the current platform
  - (c) Text file will contain line feeds that match the input image