# Home Page

* Simple, clear explanation of what handwriter does in forensic terms
* Two clearly labeled paths:
  + "I want to compare two handwriting samples" (Scenario 1)
  + "I want to determine which person from a group wrote this document" (Scenario 2)
* Success stories or testimonials from forensic document examiners (future?)

# Getting Started (How to)

* Simple installation steps with screenshots
  + Download and install R and RStudio
  + Install handwriter packages
  + Launch the application
* Preparing Samples
  + Download example samples from the CSAFE Handwriting Database
  + Scan at 300 DPI
  + Convert to PNG
  + If comparing a QD to known samples, use a naming convention. Place all known samples in the same folder.
* Path 1: Compare Two Documents
  + Get started comparing two documents
    - When to use this scenario
      * Examples
    - Requirements
    - Limitations
  + Compare two documents using the app (Vignette)
  + Compare two documents in R (Vignette)
  + Interpreting the results after comparing two documents
* Path 2: Compare a QD to Known Samples
  + Get Started Comparing a QD to Known Samples
    - When to use this scenario
      * Examples
    - Requirements
    - Limitations
  + Compare a QD to Known Samples using the app (Vignette)
  + Compare a QD to Known Samples in R (Vignette)
  + Interpreting the results after comparing a QD to Known Samples

**FUTURE WORK**

* Video tutorials
* Troubleshooting guide in non-technical language

# The Methods Explained

* Constructing writer profiles
* Path 1: Compare Two Documents
  + Big idea: use a similarity scores to measure the similarity between the writer profiles. Compare the similarity score to reference scores to measure the extent to which the score looks more like scores between samples written by the same person or more like scores between samples written by different people.
  + Constructing similarity scores (Make this its own page?):
    - Reference samples where the true writer is known
    - Lots of examples of “same writer” pairs, where two samples were written by the same person. And lots of examples of “different writer” pairs, where the two samples were written by different people.
    - Calculate the absolute and Euclidean distances between each pair of writer profiles.
    - Train a random forest on the distances using the “same writer” and “different writer” classes. (More details on training the random forest in vignette or model card?)
    - The similarity score for a distance between two samples is the proportion of decision trees in the random forest that predicted “same writer”
  + Calculate the similarity score between the two documents using the random forest.
  + Plot the observed similarity score with the reference similarity scores
  + Calculate the score-based likelihood ratio to measure the extent to which the observed similarity score is more like the different writer scores or the same writer scores (Refer to article, model card, or vignette for more info on SLRs?).
  + Cross-ref interpreting the results
* Path 1: Results on benchmark datasets
* Path 2: Compare a QD to Known Samples
  + Use rotation angles for additional features
  + Fit a Bayesian hierarchical model to the known writing samples (More details on model in model card refer to article?)
  + Calculate the posterior probability that each potential writer is the true writer of the QD
  + Cross-ref interpreting the results
* Path 2: Results on benchmark datasets

# Contact

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