# 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 (Non-Technical)

* Simple installation steps with screenshots
  + Download and install R and RStudio (with clear instructions)
  + Install handwriter packages (step-by-step with images)
  + Launch the application
* Video tutorials showing the complete process
* Troubleshooting guide in non-technical language

# How handwriter Works

* + Inputs scanned handwriting samples saved as JPEG files
  + Handwriter splits the scanned handwriting into component shapes called \*graphs\*. Graphs capture shapes, not necessarily individual letters. They might be a part of a letter or contain parts of multiple letters.
  + Handwriter analyzed handwriting samples from 100 writers, grouping the tens of thousands of graphs into 40 forty clusters of similar shapes with a K-Means clustering algorithm. The result is a \*cluster template\* of 40 exemplar handwriting shapes. These shapes might be part of a letter or contain parts of multiple letters. The cluster template is used to estimate writer profiles.
  + Each graph in a handwriting sample is matched to its most similar shape in the cluster template. By counting how often a writer uses graphs from each cluster, handwriter creates a profile of a writer's handwriting style. This profile shows the writer's tendency to form shapes in particular ways.
  + Handwriter uses statistical models to compare writer profiles. Handwriter addresses two forensic scenarios and uses a different statistical model for each scenario
  + Scenario 1 - In this scenario, a document examiner has two handwritten documents. They might know who wrote one of the documents, or they might not know who wrote either document. The examiner wants to know whether the documents were written by the same person. We call this scenario the \*open set problem\*.
    1. The pipeline
       1. Calculate distance
       2. Calculate similarity score
       3. Calculate SLR to compare similarity score to reference scores
       4. Interpret SLR
    2. Evaluation and Metrics
    3. References
  + Scenario 2 - In this scenario, a document examiner has a handwriting document from an unknown writer and a \*closed set\* of potential writers, where the document must have been written by one of the potential writers. For example, if a handwritten threat letter is found in a prison, the closed-set of potential writers is people who had access to the prison. We call this scenario the \*closed set problem\*.
    1. The pipeline
       1. Fit model to known writing samples
       2. Use model to calculate posterior probabilities of writership of the questioned document
       3. Interpret posterior probabilities
    2. Evaluation and Metrics
    3. References
  + One page model cards

# How to Use Handwriter

* 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)
* Scenario 1: Comparing Two Documents
  + When to use this analysis
    - Requirements
    - Limitations
  + How to prepare documents
  + Step-by-step guide with screenshots
  + How to interpret results
  + Example case studies
* Scenario 2: Analyzing Multiple Potential Writers
  + When to use this analysis
    - Requirements
    - Limitations
  + How to prepare documents
  + Step-by-step guide with screenshots
  + How to interpret results
  + Example case studies

# Document Preparation Guide

* Scanner requirements and settings
* Image format requirements
* Best practices for document preparation
* Common issues and solutions
* Quality control checklist

# Contact

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