

# Package ‘handwriterApp’

September 9, 2024

**Title** A 'shiny' Application for Handwriting Analysis

**Version** 1.0.1

**Description** Perform statistical writership analysis of scanned handwritten documents with a 'shiny' app for 'handwriter'.

**License** GPL (>= 3)

**Encoding** UTF-8

**RoxygenNote** 7.3.2

**Depends** R (>= 2.10)

**LazyData** true

**Imports** bslib, dplyr, handwriter, magick, magrittr, rmarkdown, shiny, shinycssloaders, shinyFiles, shinyjs, stringr, tidy

**Suggests** testthat (>= 3.0.0)

**Config/testthat/edition** 3

**URL** <https://github.com/CSAFE-ISU/handwriterApp>

**BugReports** <https://github.com/CSAFE-ISU/handwriterApp/issues>

**NeedsCompilation** no

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**Repository** CRAN

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handwriterApp                    *Handwriter Application*

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**Description**

Launch a 'shiny' application for 'handwriter'.

**Usage**

```
handwriterApp(...)
```

**Arguments**

...                    Other arguments passed on to 'onStart', 'options', 'uiPattern', or 'enableBookmarking' of 'shiny::shinyApp'

**Value**

No return value, called to launch 'shiny' app

**Examples**

```
## Only run this example in interactive R sessions
if (interactive()) {
  options(device.ask.default = FALSE)
  handwriterApp()
}
```

---

templateK40                    *Cluster Template with 40 Clusters*

---

**Description**

A cluster template created by 'handwriter' with K=40 clusters. This template was created from 100 handwriting samples from the CSAFE Handwriting Database. This template is suitable for casework.

**Usage**

```
templateK40
```

**Format**

A list containing the contents of the cluster template.

**centers\_seed** An integer for the random number generator use to select the starting cluster centers for the K-Means algorithm.

**cluster** A vector of cluster assignments for each graph used to create the cluster template. The clusters are numbered sequentially 1, 2,...,K.

**centers** The final cluster centers produced by the K-Means algorithm.

**K** The number of clusters in the template.

**n** The number of training graphs to used to create the template.

**docnames** A vector that lists the training document from which each graph originated.

**writers** A vector that lists the writer of each graph.

**iters** The maximum number of iterations for the K-means algorithm.

**changes** A vector of the number of graphs that changed clusters on each iteration of the K-means algorithm.

**outlierCutoff** A vector of the outlier cutoff values calculated on each iteration of the K-means algorithm.

**stop\_reason** The reason the K-means algorithm terminated.

**wcd** The within cluster distances on the final iteration of the K-means algorithm. More specifically, the distance between each graph and the center of the cluster to which it was assigned on each iteration. The output of 'handwriter::make\_clustering\_template' stores the within cluster distances on each iteration, but the previous iterations were removed here to reduce the file size.

**wcss** A vector of the within-cluster sum of squares on each iteration of the K-means algorithm.

**Details**

'handwriter' splits handwriting samples into component shapes called *graphs*. The graphs are sorted into 40 clusters with a K-Means algorithm. See 'handwriter' for more details.

**Examples**

```
# view number of clusters
templateK40$K

# view number of iterations
templateK40$iters

# view cluster centers
templateK40$centers
```

---

 templateK8

*Small Cluster Template with 8 Clusters*


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### Description

A small cluster template created by 'handwriter' with K=8 clusters. This template was created from 10 handwriting samples from the CSAFE Handwriting Database. This small template should only be used for examples. Use the 'templateK40' for casework.

### Usage

templateK8

### Format

A list containing the contents of the cluster template.

**centers\_seed** An integer for the random number generator use to select the starting cluster centers for the K-Means algorithm.

**cluster** A vector of cluster assignments for each graph used to create the cluster template. The clusters are numbered sequentially 1, 2,...,K.

**centers** The final cluster centers produced by the K-Means algorithm.

**K** The number of clusters in the template.

**n** The number of training graphs to used to create the template.

**docnames** A vector that lists the training document from which each graph originated.

**writers** A vector that lists the writer of each graph.

**iters** The maximum number of iterations for the K-means algorithm.

**changes** A vector of the number of graphs that changed clusters on each iteration of the K-means algorithm.

**outlierCutoff** A vector of the outlier cutoff values calculated on each iteration of the K-means algorithm.

**stop\_reason** The reason the K-means algorithm terminated.

**wcd** A matrix of the within cluster distances on each iteration of the K-means algorithm. More specifically, the distance between each graph and the center of the cluster to which it was assigned on each iteration.

**wcss** A vector of the within-cluster sum of squares on each iteration of the K-means algorithm.

### Details

'handwriter' splits handwriting samples into component shapes called *graphs*. The graphs are sorted into 8 clusters with a K-Means algorithm. See 'handwriter' for more details.

**Examples**

```
# view cluster fill counts for the template training documents
template_data <- handwriter::format_template_data(templateK8)
handwriter::plot_cluster_fill_counts(template_data, facet = TRUE)
```

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\* **datasets**

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