Faster Transcription Using Machine Learning & a New Shorthand

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Phrase 1

How can we reduce the time it takes digitally transcribe information?

Phrase 2

The final product should be able to reliably transfer written shorthand to digital text.

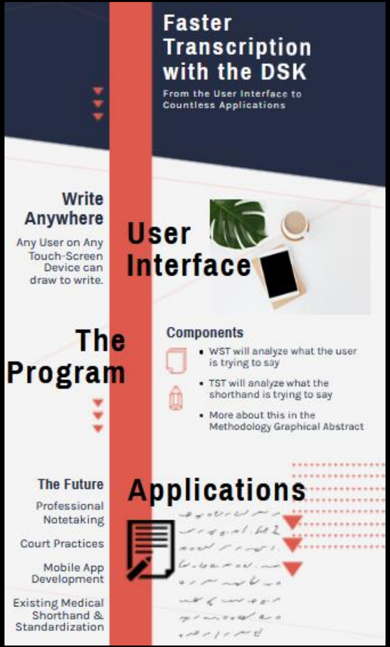
Introduction | Contribution to Field

Write Digitally Faster

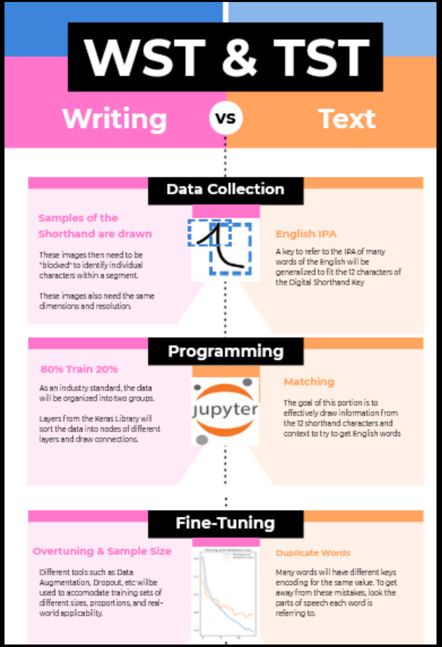
A new, custom, and efficient shorthand (loops, curls, and squiggles)

- **help people save time writing on touchscreen devices**
- **write without the traditional keyboard (easier for the visually impaired)**
- **standardize or facilitate shorthands in the medical industry.**

Abstract



Methods



Main Results

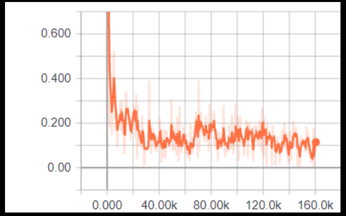


Figure 1. Total Loss from 0 Steps to 160,000 Steps
This is a graph of the progression of Loss (inaccuracy) on the y-axis over time measured in training steps on the x-axis.

Table 1. Comparison of Models Across Shorthands
This Table compares the Digital Shorthand Key, Gregg, and Pitman in Loss, Training Size, and Information Density. Higher Information Density indicates a more efficient Shorthand and more efficient Algorithm as well.

Shorthands	Loss	Training Size	Information Density
DSK	11.27%	~500	1.53
Gregg	13.50%	Database	~1.34
Pitman	10.24%	4,000	-

Table 2. Comparison of Average RGB and Stroke Count (Speed Score)
Dividing these two qualities for each experimental groups its own speed score, representative of Information Density

Name	Gregg	E1	E2	E3
Average RGB	251.25	250.48	251.44	253.57
Strokes	187	219	247	166

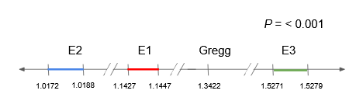


Figure 2. Ranges of Information Density Between Groups
This number line shows where the Information Density of each group (±3 standard deviations) lies.

Analysis | One Proportion Z-Test

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

$\hat{p} = Observed\ Population$

$p_0 = Null\ Hypothesized\ Value$

$n = Sample\ Size$

$z = Z\ Score$

Observed = 154/174 (Calculated via loss)

z-score of ~39.08 standard deviations from the mean
p≤0.00001 (p≤0.05).

The algorithm is effective with loss of ~0.11.

Conclusion

Info Density: 1.52
Loss = 11.37%
Steps = 160,000
Images = 500

Superior speed score
Information Density

Novel ML algorithm to digitally transcribe information with Novel Shorthand.

Supporting Documentation

QR Code to

- **Literature Review**
- **Project Proposal**
- **Project Notes**
- **& More!**