Week 5

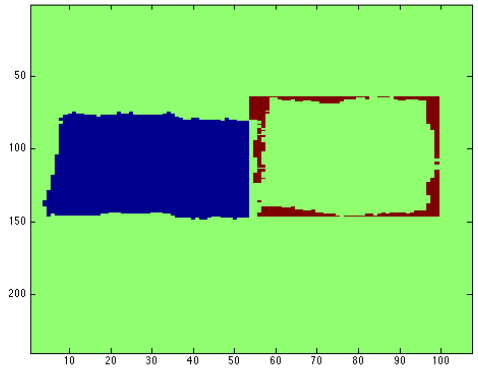
Zachary Daniels

Mentor: Haroon Idrees

Project Overview

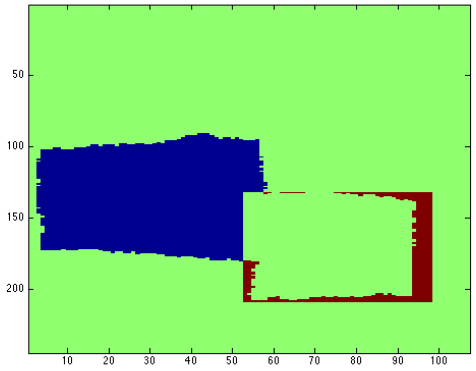
1. Synthesized Shredding
2. Oracle
3. OCR
4. Solving Puzzle

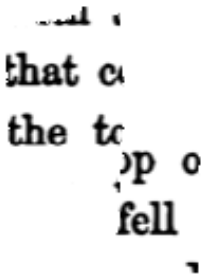
Edge Alignment: First Attempt



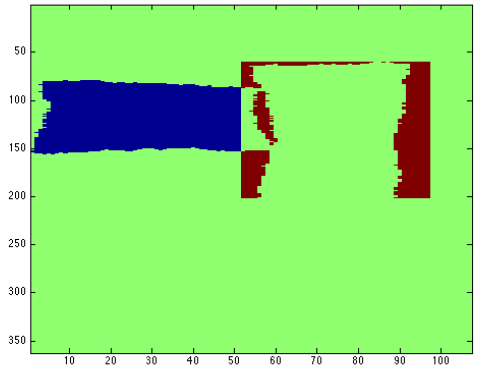
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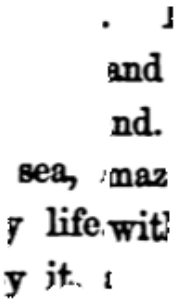
Alignment



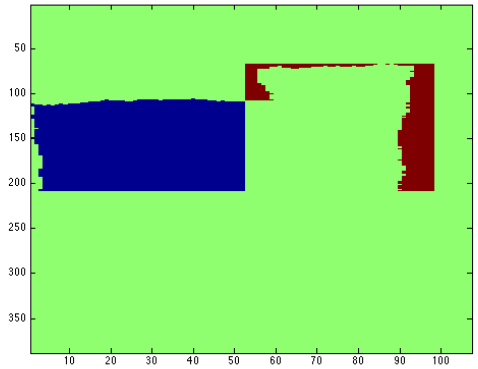


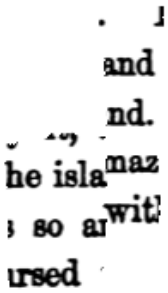
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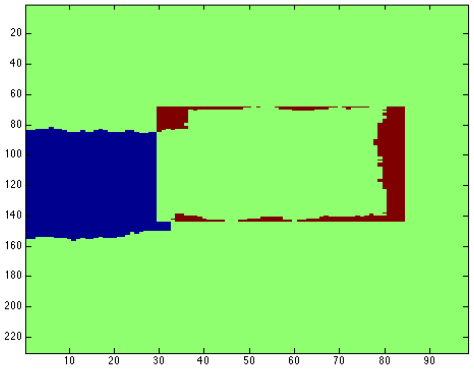

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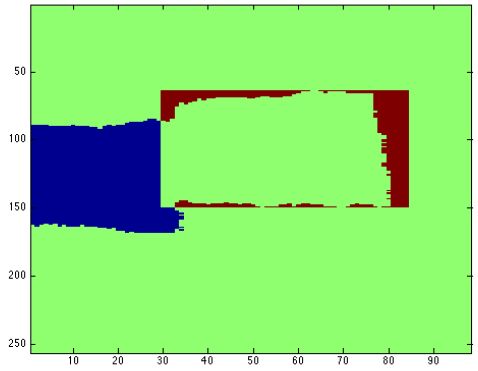

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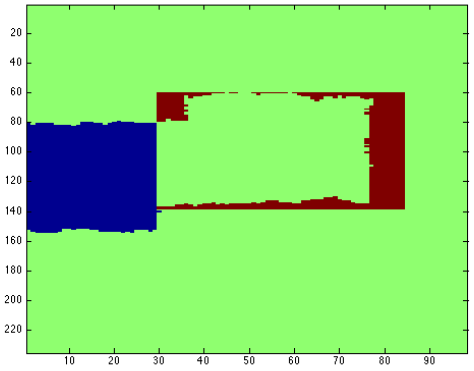
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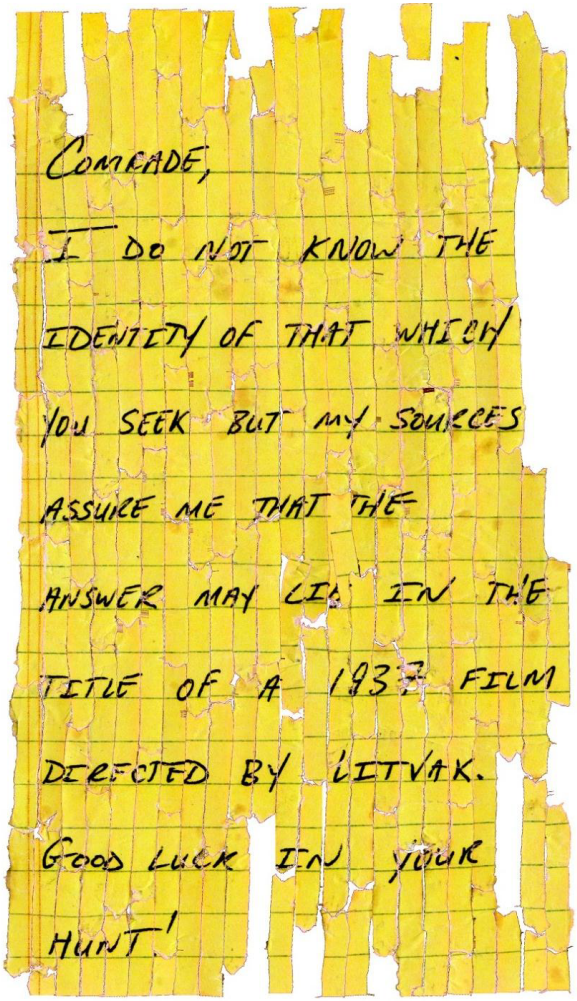
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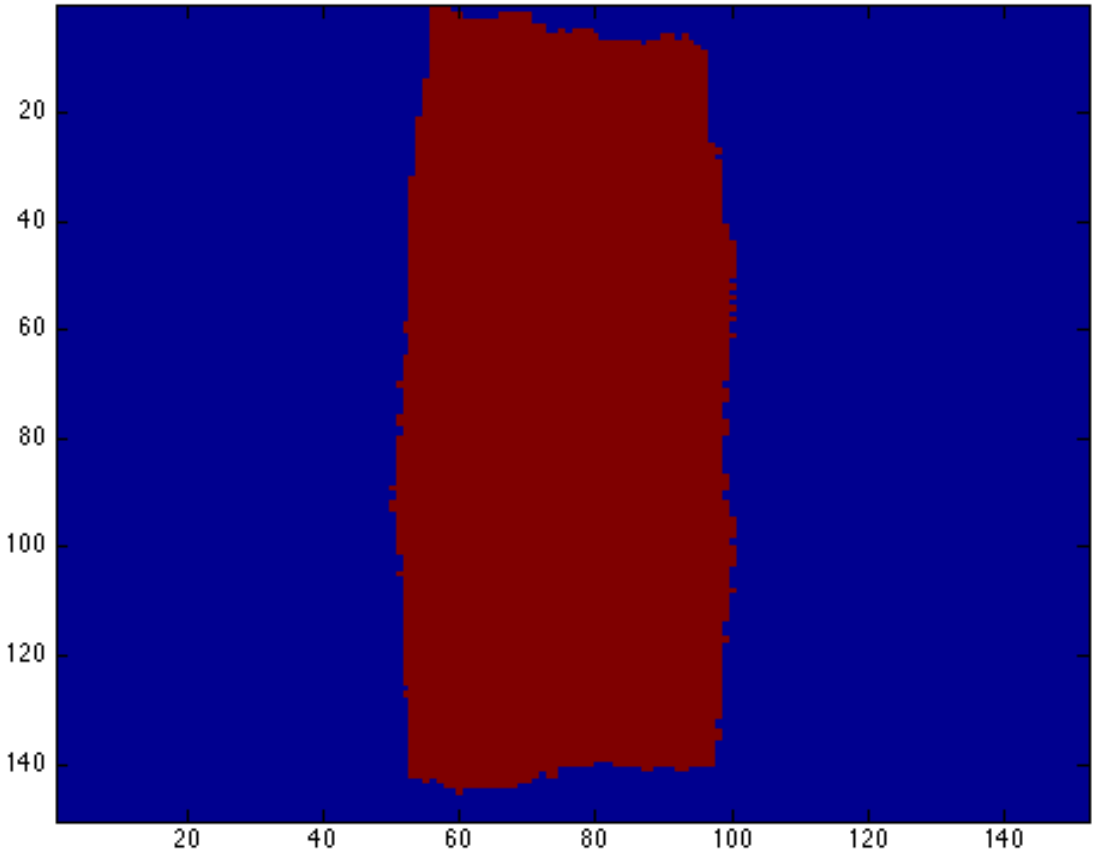


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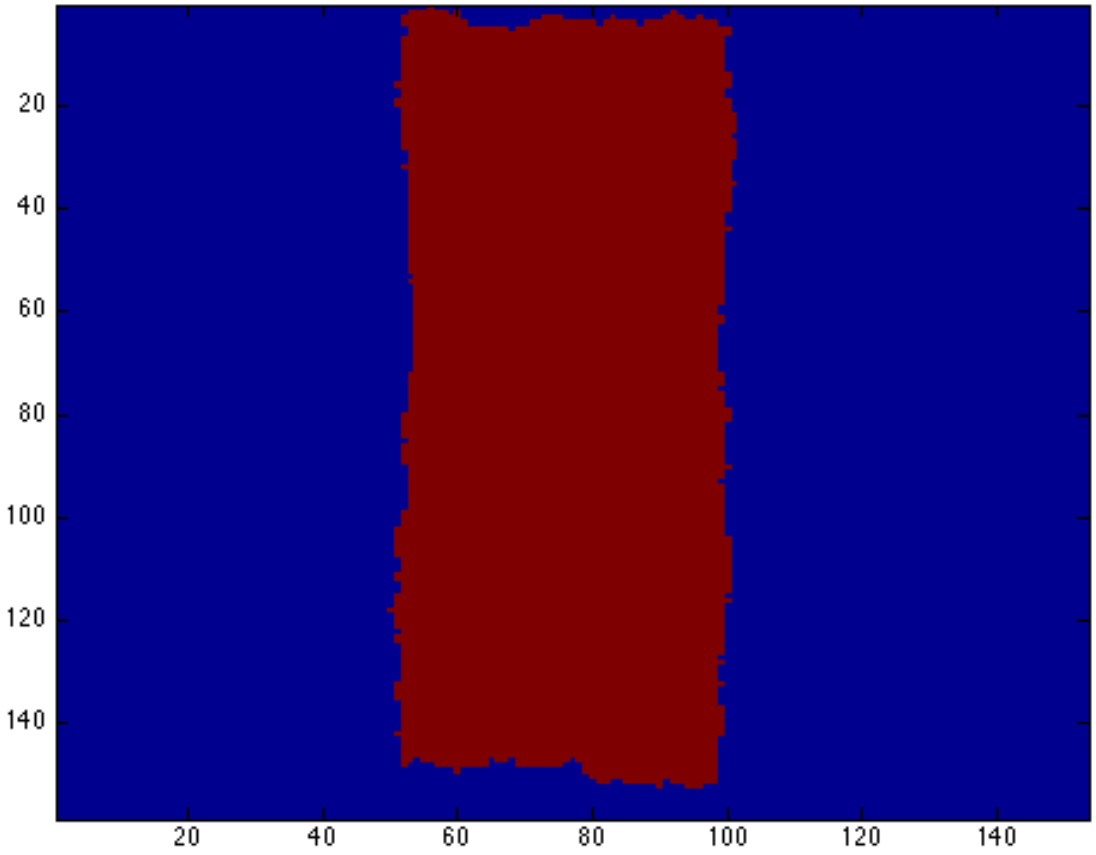
Actual Puzzle



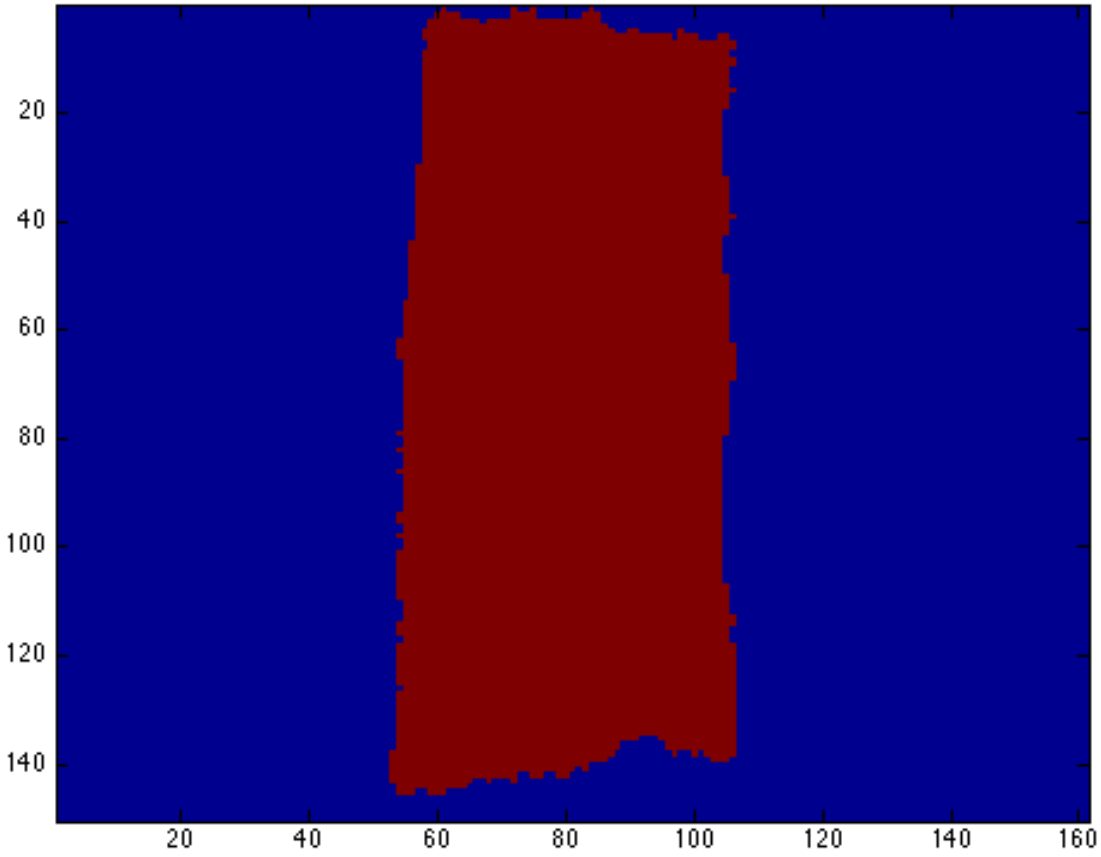
Alignment (Synthetic)



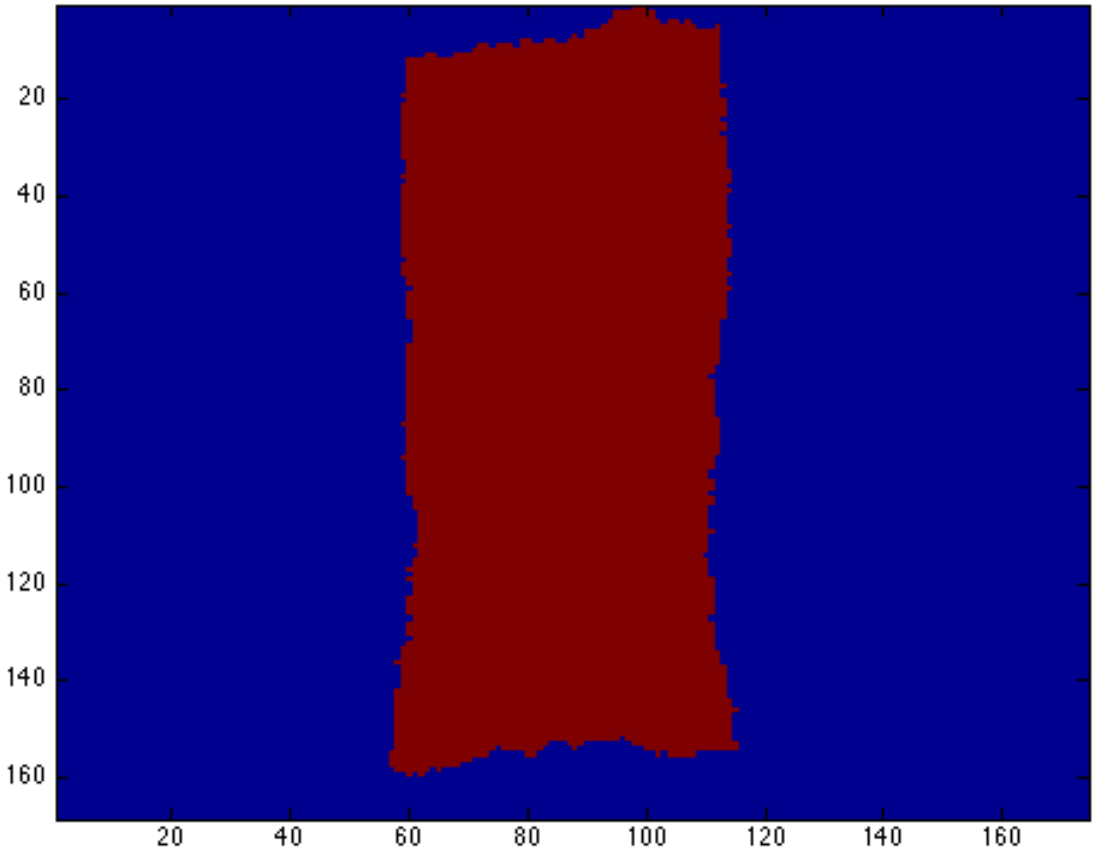
Alignment



Alignment



Alignment

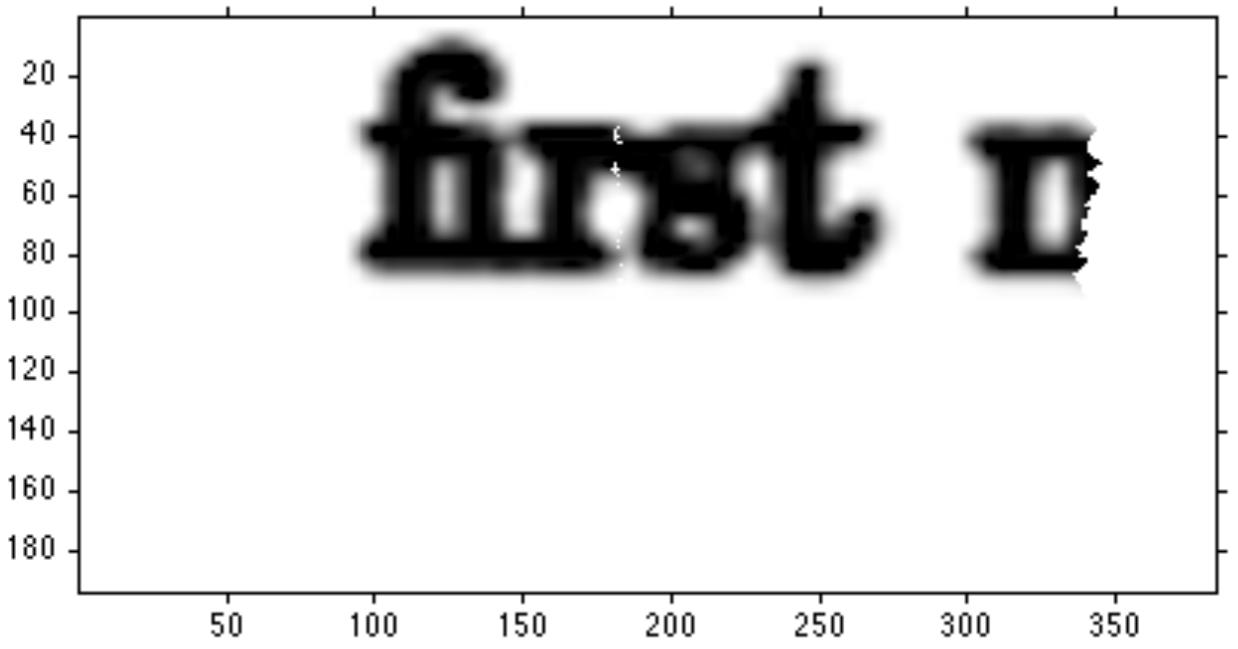


Updated Synthetic Dataset

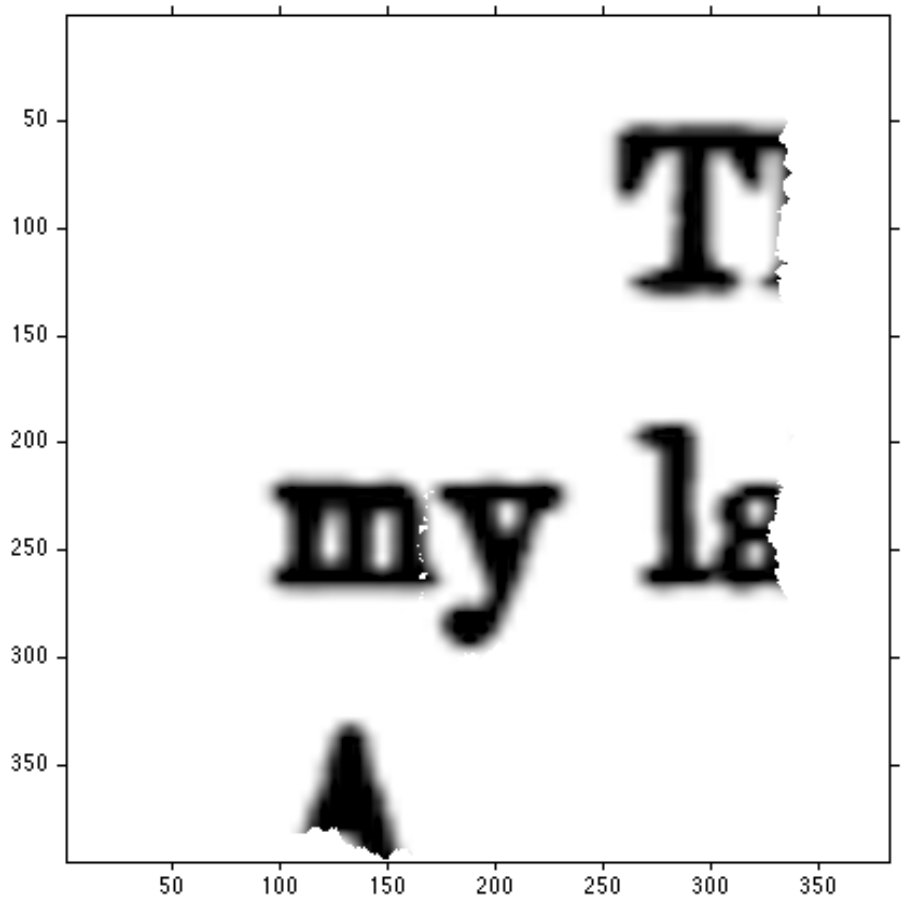
- Higher pixel-per-inch count
- Added noise and smoothing along edges
- No overlap



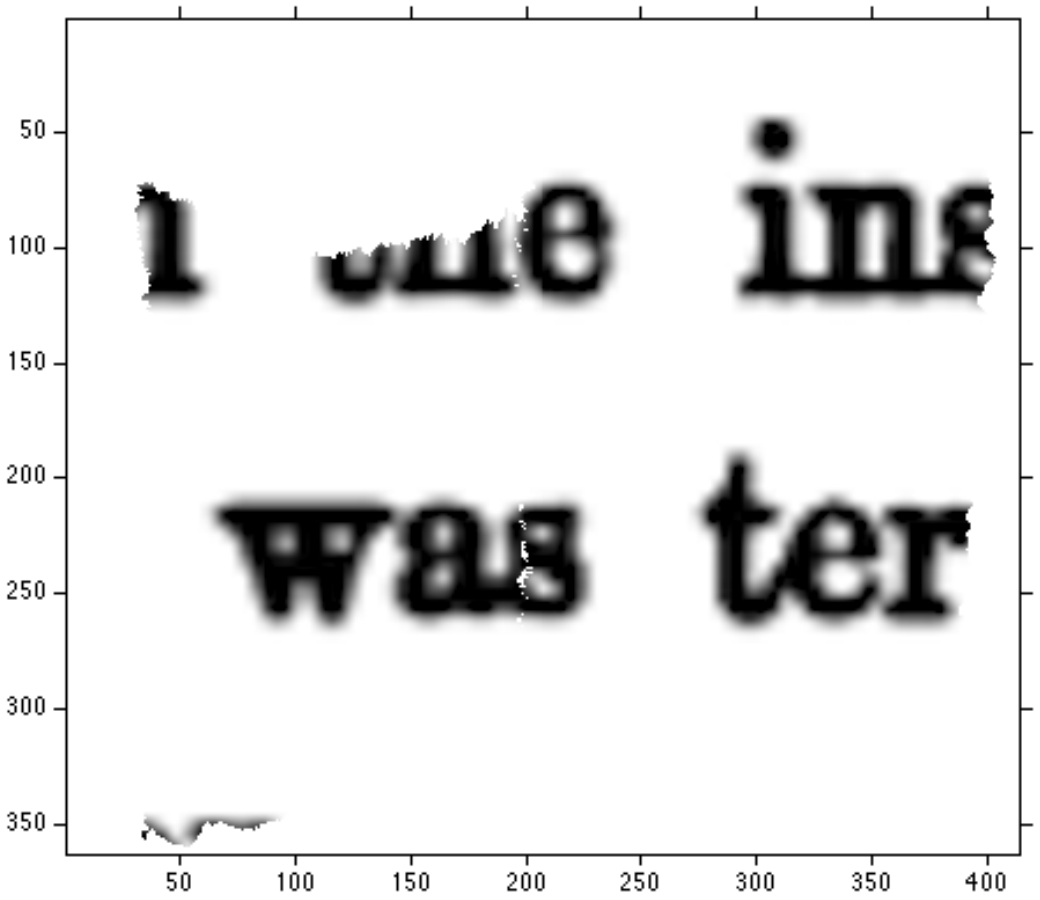
Updated Dataset



Updated Dataset



Updated Dataset

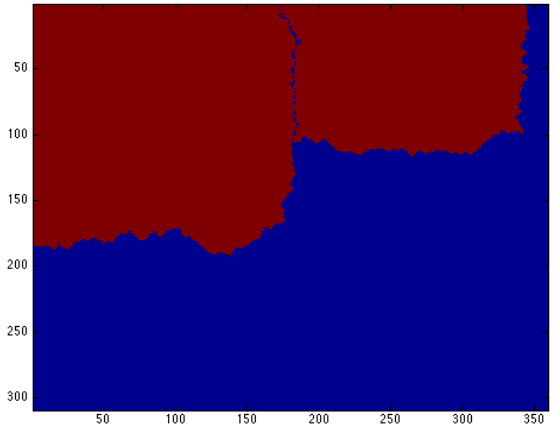


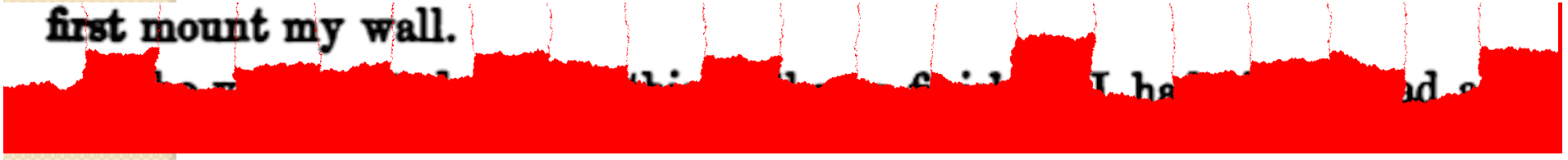
Edge Matching and Alignment

- Fixed a few bugs in time series extraction
- Added ability to detect border pieces
- Experimented with and tested edge matching and alignment on top document border
  - Easiest case: no vertical displacement, small space of potential matches

Results

- Edge Matching: 2 “guesses” on average before correct edge match found.
- Edge Alignment:

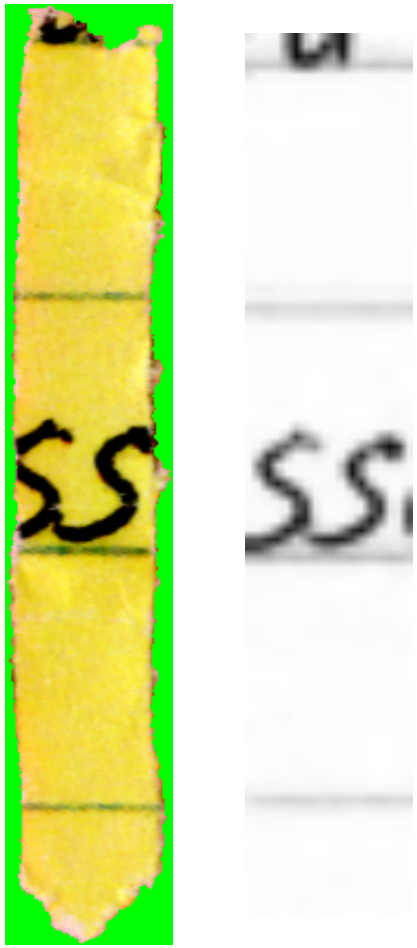




Real-Shred Oracle

1. Extract chads
2. Manually find location of several chads to use as ground truth
3. Correlate ground truth and chads at different scales to find scale factor
4. Correlate scaled chads and solution image
5. Record position and letters present on chad

Real-Shred Oracle (Ideal)



OCR

- Find larger datasets of handwriters
- Find better handwriter similarity software
- Apply different transformations to writers
- Scale writing
- Extract writing from shred and add shred to training set
- Train OCRopus