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- This presentation: https://dvon.github.io/home/aha/

Disclaimer

- I'm not a historian...

  - And *computer vision* is not my research area.
  - This is a subject I'm interested in, motivated to learn so that I might be able to teach a course in the future.

- *I'd be glad to learn from you*, if anyone in the audience has experience in this area.

Background

- Census data available (from, e.g., Ancestry.com).

  - But some information missing...transcribed by volunteers.
  - Would be *beneficial to have an alternative* way of converting to images to text.

- *Optical character recognition* (OCR) software is designed to recognize characters in image data.

  - ...to *"read" the text in a picture.*
  - It's particularly hard to recognize *handwritten* characters.

- But maybe we don't need to recognize characters.

  - If we had *a way to group similar images...*
  - A human user could interpret a single image; that interpretation could be applied to all images in the group.

Scans

- What do *the scans we have* look like?

  - Example scan...

- How might we *generate a template* to represent what scans have in common?

  - To specify where to crop cell images, where within cell image are boundaries to be deleted.
  - Composite image...

- Will *a single template* will be sufficient?
    - Is there enough consistency between scans?
    - Bad scan...

Cells

- *Create an image for each cell.*
    - Choose a form, choose a column.
    - For each cell in column, copy and crop individual cell image.
    - Ownership columns...
- Prepare cell image for comparison.
    - *Delete* (horizontal and vertical) *cell boundaries*, based on template image.
    - One attempt at deleting boundaries, another attempt...
    - Reconnect broken lines. (*Working on an algorithm* for this; not sure how successful or necessary it will be.)

Similarity Groups

- Considering *all cell images from a column...*
    - Across multiple form images, eventually?
    - Ownership columns (again)...
- *Divide into similarity-based groups.*
    - Using *scikit-image comparison functions*?
    - K-Means approach, used in recognition of, e.g., Chinese characters, has also been suggested.

User Interaction

- Create annotated version of form image.
    - *Mark images* to show which group they belong to.
    - Provide indication of confidence level for similarity-based groups...*How similar are cells within group?* How distinct are cells in different groups? Which cell is a good representative?
- Human user interaction...
    - Verify similarity, based on sample of less-similar images from within a group.
    - *Assign textual value,* based on representative image, for all images in group.