Decapod Book Digitization Process

DIGITIZATION

CONSIDERATIONS

* Portrait vs. landscape books
* Dealing with with thick books
* Wooden cradle for books, with gap for spine
* Book covers clipped to cradle with bulldog clips
* Eventually will have some setup prescribed/ suggested for users, down to specific part numbers

EQUIPMENT ASSEMBLY

CALIBRATION

CAMERA POSITIONING CALIBRATION

* Entire page spread needs to be viewable by both cameras
* Mainly automatic
* Calibration determines where the cameras are relative to each other, so recalibration needs to be done if cameras are touched
* Can't detect if cameras were touched
* No live preview

PHOTOMETRICS CALIBRATION

* Colour calibration strip (glued to cradle?)
* White balance card (glued to cradle?)
* DPI (via barcode?)
* etc.

LEGEND

- Activity/task requiring user
- Automated activity/task
- Resource (output/input)
- Issues & considerations

○──▶○ Key path
○--▶○ Optional path

METADATA INPUT

* Process related data
* Open text field

Foot pedal/ key press/trigger OR automated

REVIEW OF LAST SHOT

* There's a possibility of on-the-fly image dewarping and merging if necessary
* Or running it in a queue in the background

PAGE CAPTURE

* Blind capture
* Readiness indicated by screen going green or audible beep

CAPTURE FAILURE TYPES

* Flipping multiple pages at once
* Double take of same spread
* Obstructions (object in front)
* Shaking, blurring
* Pre-emptive trigger of capture
* Power/system failure
* Moving/shifting book
* Change in lighting conditions (gradual/sudden)
* Torn pages

REVIEW OF DOCUMENT THUS FAR

* Thumbnail grid view ("a la iPhoto")
* Quality control ("do I need to recapture?", "did I miss a page?", "did I capture a page out of order?")
* Show both images, or one image? (TBD)

IMAGE PROCESSING

* ~1 minute/page
* Stereoscopic image merging + dewarping
* Done locally, maybe remotely

SEQUENCE OF STEREOSCOPICALLY MERGED PAGE SPREADS IN LOSSLESS RASTER FORMAT

* "Original" images as captured (plus dewarping/ merging), not binarized

Remote server/ storage

REMASTERING

PAGE-BY-PAGE ANALYSIS

* ~1 minute/page
* Background normalization and binarization, etc.
* Processes include: font generation (at the document level), layout analysis, flow analysis, text/image analysis, physical (not logical/semantic) document structure analysis
* No header/footer, footnote, page number recognition

DOCUMENT CONSISTING OF SEQUENCE OF POST-ANALYZED SINGLE PAGES

* Layouts segmented and text flows
* OCR'd and fonts generated
* Document partially structured and sequenced

TWEAKING (USER QA)

SEGMENTATION

* For columns: toggling separators on or off
* For figures: setting rectangle zones
* Allow user to set whether the document's single or double column
* Sanity check management

TEXT FLOW

* Manually set flows

REMASTERING SESSION MANAGEMENT/ PAGE ORDERING

NAMING OUTPUT, FILLING METADATA

PDF OUTPUT W/ METADATA