Digitizing Dissertations and Theses In-House | Planning and Implementation
Who am I?

- Joy M. Perrin
- Digital Initiatives Librarian
- Texas Tech University
- ORCID: 0000-0001-5524-9071
- joy.m.perrin@ttu.edu
Overview

- The Digitization Process
- Metadata
- Scanners/ Equipment
- Project planning
- Maintenance
- Talking to Administration
The Good, the Bad, and the Ugly
The Good

“Easy” projects

Rewarding

Support local workers
The Bad Time/ Resources Mistakes
The Ugly

- Learning curve
- Management overhead
- Murphy’s Law
Digitization Process
© 2000-2003 Cornell University Library/Research Department

- “Moving Theory into Practice”
- http://preservationtutorial.library.cornell.edu/
Before you start

Decide how you will organize the physical items

Newest first?

Oldest first?

Batches?

Mark them as checked out in the catalog?

How will the items be handled after they are scanned?
File management
File Naming

**ttu_etd_000001_000001.jpg**

- **Organization**: ttu
- **Project**: etd
- **First thesis or dissertation**: 000001
- **First image of first thesis or dissertation**: 000001
Step 1
Scanning
<table>
<thead>
<tr>
<th>Physical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typically bound</td>
</tr>
<tr>
<td>Typically similar sizes</td>
</tr>
<tr>
<td>Typically standardized</td>
</tr>
<tr>
<td>Margins</td>
</tr>
<tr>
<td>Typically printed on only one side</td>
</tr>
</tbody>
</table>
I hate carbon copy paper
Cutting?

• Sheet Feeder
  • $2k-$10k
  • 100 pages per minute
• Not all books will go through
• Review books before cutting
Supplemental Files

- Maps
- CDs
- Tapes
- Floppy disks
- Slides
Step 2
Image Processing

Crop

Edit color
Image processing software

- Look at what your scanner comes with

What you need:
- Something that will crop and edit colors
- batch images
Will it do batches?

- Reduce Hands-On time
- Millions of images
- Batching is faster
- 100% hands off processing is possible
- Automate when you can.
Step 3
OCR

- 80-90% accurate
- Contrast is good
- Adobe Acrobat Pro
- ABBYY Fine Reader
  (Others)
Step 4
Quality Review

Check 100% of work for 2 weeks

For 2 months, only check 10%

After that, check only 1%

QR fail a re-training moment

Don’t fix errors yourself
Step 5

Item

Upload and Metadata
What affects metadata speed?

- System
- Schema
- Items
- Human resources
- Workflow
What affects metadata speed?

- System
- Schema
- Items
- Human resources
- Workflow
Texas Digital Library Descriptive Metadata Guidelines for Electronic Theses and Dissertations, Version 2.0

URI
http://hdl.handle.net/2249.1/88437

Collections
TDL Documents

View/Open
- Dictionary of Texas Digital Library Descriptive Metadata for Electronic Theses and Dissertations, v. 2 (559.2Kb)
- Report for Texas Digital Library Descriptive Metadata for Electronic Theses and Dissertations, v. 2 (381.6Kb)
What affects metadata speed?

- System
- Schema
- Items
- Human resources
- Workflow
What affects metadata speed?

System  Schema  Items  Human resources  Workflow
What affects metadata speed?

- System
- Schema
- Items
- Human resources
- Workflow
Cataloged?

- Link to MARC record?
- Copy by hand
- Automate using a program
Reveals Cataloging Problems

Copy 1 vs Volume 1

Uncatalogued Theses and Dissertations

Incorrect Cataloging
RETRODIRECTIVE ARRAYS FOR WIRELESS POWER TRANSFER APPLICATIONS

dc.contributor.advisor: Saeed, Dr. Mohammad

dc.creator: Falouz, Mohammad A

dc.date.accessioned: 2016-07-05T19:19:22Z

dc.date.available: 2016-07-05T19:19:22Z

dc.date.created: 2015-06

dc.date.issued: 2015-06-21

dc.date.submitted: August 2015

dc.identifier.uri: http://hdl.handle.net/10246/74022

dc.description.abstract: This dissertation presents a novel one-dimensional, dual-frequency, active retrodirective array for wireless power transfer applications. A retrodirective array automatically scans its transmitting antenna beam in the direction of a transmitter (interrogating signal) without prior knowledge of its location. The implementation of a retrodirective array for wireless power transfer can improve efficiency significantly over an antenna array with a fixed beam. The retrodirective array allows the use of a large transmitting antenna array to produce a narrow beam that can be scanned to provide coverage within a desired sector. The high antenna gain (narrow beam) yields much higher power densities at the receivers than an array with a fixed beam that must be wide enough to cover said sector. The retrodirective array developed in this research uses an array of microstrip circular patch antennas modified to avoid excitation of troublesome surface waves. Each microstrip antenna uses four shorting pins to suppress surface waves. The improved antenna array is used as the transmitting antenna in the retrodirective system in order to increase the efficiency and improve the overall performance. The proposed retrodirective array operates at 2.4GHz for the interrogating signal and 5.8GHz for the retransmitted signal, using up-converting mixers. The...
Electronic Theses and Dissertations

BROWSE BY

Search within this collection

Electronic theses and dissertations (ETDs) are the graduate research outputs of Texas Tech University. They represent years of work from our Master's and Doctoral graduates. Find and stream Texas Tech faculty recitals, graduate student recitals, Inaugural Dinners, and other performance recordings. These audio performances are accessible via eRider login from the University Library website on your computer or mobile device.

Have a listen at Stream Audio & Video Experience (SAVE): Stream Audio and Video Experience (SAVE)

Recent Submissions

RETRODIRECTIVE ARRAYS FOR WIRELESS POWER TRANSFER APPLICATIONS

Farouk, Mohamed A. (2015-09-21)

This dissertation presents a novel one-dimensional, dual frequency, active retrodirective array for wireless power transfer applications. A retrodirective array automatically scans its transmitting antenna beam in the...

Proactive streaming and sand tray: Using conjoint analysis to compare two therapeutic processes

Ramananthy, Vija (2014-08-03)

A new therapeutic process called Proactive Streaming is introduced in this dissertation. Early experience with this process indicates possible benefits for improvements in focus, emotion, memory and perception. It may...

A Quantitative Study Examining Compliance to the Saudi Schools Nutrition Policy and Alignment to the IOM Standards in Boys' Public High Schools in Riyadh, Saudi Arabia.

Al-Ikubayan, K.A. (2009-09-21)

Aims: This study investigated the compliance of the selected schools to the Saudi policy regarding "meals and beverages offered in school canteens," and assessed the quality of the food offered as breakfast in the canteens...

The Perception of the Impact of Mispronouncing Culturally and Linguistically Diverse (CLD) Names: A Collaborative Autoethnographic Study
Maintenance
Ongoing

Authors changing their minds
Updating Metadata or schema
Fixing random errors
Digital preservation
Assessment
“Missing” items
Online File Management

Image courtesy of Heidi Winkler
<table>
<thead>
<tr>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>ttu_etd001_005319</td>
<td>Mass media use and political integration in N. Ogahue</td>
<td>Moses Osearin Fran</td>
<td>Political Science</td>
<td>Doctoral</td>
<td>1980-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005320</td>
<td>Production functions and plant size in U.S. m.Salehe</td>
<td>Ailiz N.</td>
<td>Economics</td>
<td>Doctoral</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005321</td>
<td>The Influence of Seed Density on Select Chen Barlee</td>
<td>Sammy Nix</td>
<td>Accounting and Informa Masters</td>
<td>Research</td>
<td>1930-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005322</td>
<td>An outline on teaching cotton production in Thrumman</td>
<td>Robert Lee</td>
<td>Agricultural Education a Masters</td>
<td>Research</td>
<td>1930-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005323</td>
<td>Cytogenetics of a centric transposition of joj Guerre Ruiz</td>
<td>Horman Pastor</td>
<td>Botany Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005324</td>
<td>Natural Hybridization Between Two Chrom Protein</td>
<td>Robert Glenn</td>
<td>Botany Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005325</td>
<td>8254211: Quantification of genetic selection in a green Pea</td>
<td>Billy Dean</td>
<td>Botany Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005326</td>
<td>Ecology and systematics of the pocket gopher Reichman</td>
<td>Omar James</td>
<td>Accounting and Informa Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005328</td>
<td>Reproductive studies of the Mexican pocket Ikenberry</td>
<td>Roy Dewane</td>
<td>Zoology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005329</td>
<td>Parasitism and Food Habits of the Bobcat in S Stone</td>
<td>Joanne R</td>
<td>Psychology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005330</td>
<td>Humanity in the face of inhuma: the PQN Tuokari</td>
<td>James R.</td>
<td>Psychology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005331</td>
<td>The Selling Policies of Naiman-Marcus O &amp; Trrol</td>
<td>Catherine</td>
<td>Accounting and Informa Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005332</td>
<td>Historical resources of the Fortymile River A Bell</td>
<td>Wendell Gordon</td>
<td>Park Administration Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005333</td>
<td>The effects of a rhythmic auditory stimulus at Maloney</td>
<td>Alan Kent</td>
<td>Psychology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005334</td>
<td>A mathematical analysis of the musculo-skel Tone</td>
<td>Young-Pil</td>
<td>Mechanical Engineering Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005335</td>
<td>Elizabeth Barrett's influence on the poetry of Robbins</td>
<td>Willma</td>
<td>English Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005336</td>
<td>Planning and management practices used in Ennis</td>
<td>Robert</td>
<td>Higher Education Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005337</td>
<td>The Standardization of an Experimental Test</td>
<td>Linda Bednar</td>
<td>Speech Pathology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005338</td>
<td>Rehabilitation counselors: the influence of g Williams</td>
<td>Dale Wayne</td>
<td>Psychology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005339</td>
<td>An examination of some of the factors influ Crawford</td>
<td>Jim Dwight</td>
<td>Psychology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005340</td>
<td>Measurement of trace levels of reduced sulfur Yang</td>
<td>Huey-chin</td>
<td>Chemistry Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005341</td>
<td>An electron microscopic cytological study of Barham</td>
<td>Steven S</td>
<td>Zoology Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005342</td>
<td>Personal responsibility: origins of the west Daniel</td>
<td>Wendell B</td>
<td>English Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005343</td>
<td>The effects of method and time of castration Zwerlacher</td>
<td>Eduard Ray</td>
<td>Animal and Poultry Science Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttu_etd001_005344</td>
<td>A study of the problem of Interscholastic ath Miller</td>
<td>William Augustus</td>
<td>Education Masters</td>
<td>Research</td>
<td>1970-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Equipment
Scanner options

- $300-600
  Plustek OpticBook

- $10-20k
  ATIZ

- $20-30k
  CopiBook

- $60-180k
  Kirtas
The Perfect Scanner

Sufficient Quality
The right price range
Handle the items physically
Fit the space and work area
Facilitate the time frame
Scanner Quality (Jenkins 2008)
See the Scanner in action

- Human intervention?
- Moving parts?
- Noise levels?
- Easy to move?
- How long to finish 5 example items?
- What are the limitations?
What problems have you experienced with this equipment?
What has been your experience with this company?
In your opinion, does the company have good customer service?
What kinds of projects have you used this equipment on? Were they successful?
Do you think this equipment would work for what I want to scan? (Explain your project)
Is there other equipment you like better than this?

Can’t see the scanner in action?
Ask someone who has
Lifecycle

Ask vendor about expected lifecycle

How long will they support warranties?
Scanner Maintenance

1. Ask about cleaning schedule
2. Ask about any unusual cleaning issues
3. How often will the equipment need major maintenance?
DIY scanners

Wired.com

BOOK SCANNING!
Instructables: Bargain-Price Book Scanner
Cameras Vs Scanners
Other equipment

- IT Resources
  - Monitors
  - Servers
- Lights
- Computers
  - Duster
  - Vacuum
- Target cards
- Cleaning supplies
  - Duster
  - Vacuum
  - Glass cleaner
Project Planning

For Theses and Dissertations
What We did

14,000 Theses and Dissertations

Goal: 5 years.

2 automatic book scanners

Ongoing budget

Started in 2007- Finished in 2009* (3 years)

*Major scanning effort ended in 2009, but there have been individual smaller projects to deal with missing items and oddities.
Total cost of project $1,468,000
Planning a project

• Define what you will do
• Define how long it should take
• Define what resources you have to do it
• Which is most constrained?
Workflow Design

- Group similar items together
- Aim for simple processes
- Aim for paring passive tasks with active tasks
- Total time to completion
- Pay attention to Backlogs
- Small changes have a big impact
- Keep documentation
Experiment

Always experiment

Do time studies

| Total time in process per item | Average process time for a single item | Average process time per image |

Continually re-calculate your estimates based on new data
Start Today!
| Books per week | 40          |
| Worker hours per week | 80          |
| Weeks            | 25          |
| Costs            |             |
| Equipment        | $2,600      | 12%         |
| Warranties       | $520        |             |
| Staff            | $23,000.00  | 88%         |

| Years | 0.5          |
| Total:| $26,120      |

http://bit.ly/2t8O6IS Cost and Time calculator
Ongoing Costs
Examples

1,000 Books
10,000 Books
50,000 Books
14,000 Books with High speed scanners
14,000 Books with Flatbeds
1,000 Books
2 years and
$17k

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanner</td>
<td>$600</td>
</tr>
<tr>
<td>Computer</td>
<td>$1,000</td>
</tr>
<tr>
<td>Books completed per hour</td>
<td>.5</td>
</tr>
<tr>
<td>Wages</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$17,240</strong></td>
</tr>
</tbody>
</table>
10,000 Books

Each scanner scans 1 book an hour

7.50/hour $1,000

$600

2 Books per hour
2.5 years
$127,000

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment</td>
<td>$4,200</td>
</tr>
<tr>
<td>Warranties</td>
<td>$2,520</td>
</tr>
<tr>
<td>Wages</td>
<td>$120,500</td>
</tr>
<tr>
<td>Total</td>
<td>$127,220</td>
</tr>
</tbody>
</table>
50,000 Books

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment</td>
<td>$8,400</td>
</tr>
<tr>
<td>Warranties</td>
<td>$11,760</td>
</tr>
<tr>
<td>Wages</td>
<td>$570,500</td>
</tr>
<tr>
<td><strong>Total</strong>:</td>
<td><strong>$590,660</strong></td>
</tr>
</tbody>
</table>

4 books/h
6 years and 3 months
$591,000
14,000 with Kirtas machines

4 books/h
2 years
$621,000
14,000 Books

2 books/h
3.5 years
$173,000
A note about managing part time workers

The work is boring, hire appropriately

Hire detail oriented people, who are not obsessed with perfection

Anticipate turnover

More people, more equipment, more problems, more overhead
Talking to Administration about Digitization
Pros to Digitize-in-House

- You can usually do more for less money
- You develop local knowledge
- You support local workers
- You retain control of the process and the items
- Maybe only outsource "hard" items
Cons to Digitizing in-house

- More staff required
- More financial investment upfront
- Limited Skills
- In-House is not always cheaper—get a quote
Manage Expectations

- Explain upfront and hidden costs
- Reasonable Schedule
- Set the scope of the project
- Reasonable Skills
- Human resource time Commitments
Under Promise and Over Deliver

Take whatever the calculator says and add 20% time and money.

This may not be far off when outside factors are considered.
Consultations

joy.m.perrin@ttu.edu

Work Phone: +1 (806) 834-3694

Twitter handle: @jmpttu
End