Research and Academic Integrity

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Outline

- Internet and Peer Review
- How to Start
- Books, Journal and Conference Papers
- Useful Features
- Document and Create a Library
- Quality and Quantity
- Be Honest!
Internet and Research

- Prior to the internet, research on a topic took months of toiling through papers, books, etc.
- Now, everything is at your fingertips
- This is a good thing and a bad thing
- Just because you read something does not make it true
- Learning how to diagnose the information is critically important
- This is why you came to graduate school...to be an expert on a topic
Peer Reviewed

- The majority of the internet is NOT peer reviewed
- Peer reviewing is IMPORTANT
  - Uses knowledgeable people in the field in order to validate thoughts, comments, and research
  - Prevents errors, misinterpretation of the facts, hearsay, wild thoughts, and wrong physics
  - Just because it is on the internet does not make it right
- What if I were to put on my KU webpage that the “earth is flat”? 
Where to Start

- The KU Libraries are fantastic!!!
- https://lib.ku.edu/
- Gateway to information
  - Can search from the front page
  - Can use specific databases
Books

- Basic tools for understanding the fundamentals giving you a good breadth of the background materials
- Not up-to-date, but they provide information regarding the history of what has been done in the past
- Typically, an excellent summary
Technical Papers

- Best sources for up-to-date material
- Hit or miss on quality; hence, quantity is also important
- Journals > Conference Papers
- Be careful of a singular paper that goes against the norm
- Want results verified by multiple researchers
- Can have conflicts, that’s OK
- Review papers, great place to start
Databases

- Couple that I use: Web of Science and Science Direct
- Specific to my field: SAE Digital Library
- Yikes, there are a lot of papers!!!
- Yes, this is where specificity becomes important in your search
Very Useful Features

• Say you find a great paper
• You can:
  1. Get at KU
  2. Save the citation information to a bibliography program (learn one!)
  3. Find other papers by the authors
  4. Find other papers that have cited (or been cited by) this paper
• All you need is one good paper, the rest will follow
Not Available, No Worries

- You find a paper, but it is not available at KU
- You can “Request a copy from Interlibrary Loan”
- Click on that link and sign into WebRetrieve
- Low and behold, it fills in the information for you!
- KU Libraries will send an e-mail notice when paper is ready to download
Document as You Read

- You will forget what you learned, so summaries are helpful
- Saves a step in generating your report, paper, thesis, or dissertation
- Takes a little longer to read papers, but spend less time in long run
- Read papers twice:
  - Use highlighter to indicate minor/major items, jot notes down in margins
  - Read another paper, and do same thing
  - Continue doing this for a large number of papers
  - Go back to first paper, just read the highlighted portions/notes
  - In separate document, type up what is really important and add reference
  - Find same idea in different paper, simply insert that reference

References on how to critique a research paper:
http://www.biochem.arizona.edu/classes/bioc568/papers.htm
http://dx.doi.org/10.1016/j.radi.2004.09.001
Create a Library

- Download the paper as a PDF
- Create an indexed repository of the papers that allows you to quickly recall the papers just in case you lose/need them
- For example:
  - Folder: Hydrogen Assisted Combustion
  - File Name: Ccecrle2012_AnalysisEffectsH2COAssistiveFuelPerformanceBiodiesel_IntJHydrogenEnergy_v37_n4_p3510-3527
  - Author / Year / Title / Journal / Volume / Issue / Pages
- Naming the file with pertinent information makes it much easier to find (or search) for it later
- You can even link the PDFs to your EndNote Library
Quality and Quantity

- Do not spend too much time with one source
- Try to get the main points to see how valuable it is
- Mark the most important papers (best information) separately (e.g., * in corner of first page)
- Great research includes both *quantity* and *quality*
  - *Quantity* captures different viewpoints and dissimilar analyses
  - *Quality* ensures that the material is covered in sufficient depth
- One needs both to be a great researcher
This is YOUR Work

- Academic honesty should be your #1 priority
- Your efforts are a reflection of the university and your faculty advisor
- Plagiarizing is extremely easy to catch
- This is why quality and quantity is needed
  - It allows you to interpret the literature in your own words
  - You can become an expert in the field
  - This leads to a great job and fantastic life
  - There are no shortcuts!
- Spend the time, and you will be rewarded
Thank You!

Any Questions?