



Junior  
Seminar:  
CS/INFM 580  
Preparation  
for Senior  
Projects

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Gimme an  
idea?

This Course

Research Area

Finding Literature

Determining  
Feasibility

Big Questions

Writing

The Intro, Related  
Works and Method

Finding Methods

To get there?

# Junior Seminar: CS/INFM 580 Preparation for Senior Projects

Oliver BONHAM-CARTER

17 January 2024



# Your Senior Comp Research Subject

*Many competing students may ask...*

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## Gimme an idea?

## This Course



- Senior Thesis class proposal
  - *How to come up with a good (achievable) idea?*

# Your Senior Comp Research Subject

*Many comping students ask...*

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## How can I be successful in completing my comp?

- I have an idea, how to start implementing it?
  - Could I program well enough?
  - Could I implement an algorithm?
  - Will I collect the correct data?
  - Will I understand my results?
  - Could I write the final proposal?
  - Could I write the final document?
  - Will I find relevant literature to read
  - Will do I need to know about my area?

## Getting started

- I may need some help getting started
- Let's see what's out there ...

# Navigation in Research

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● Cool; But how do I use this?!



# Research Flowcharts ...

How to start my project?

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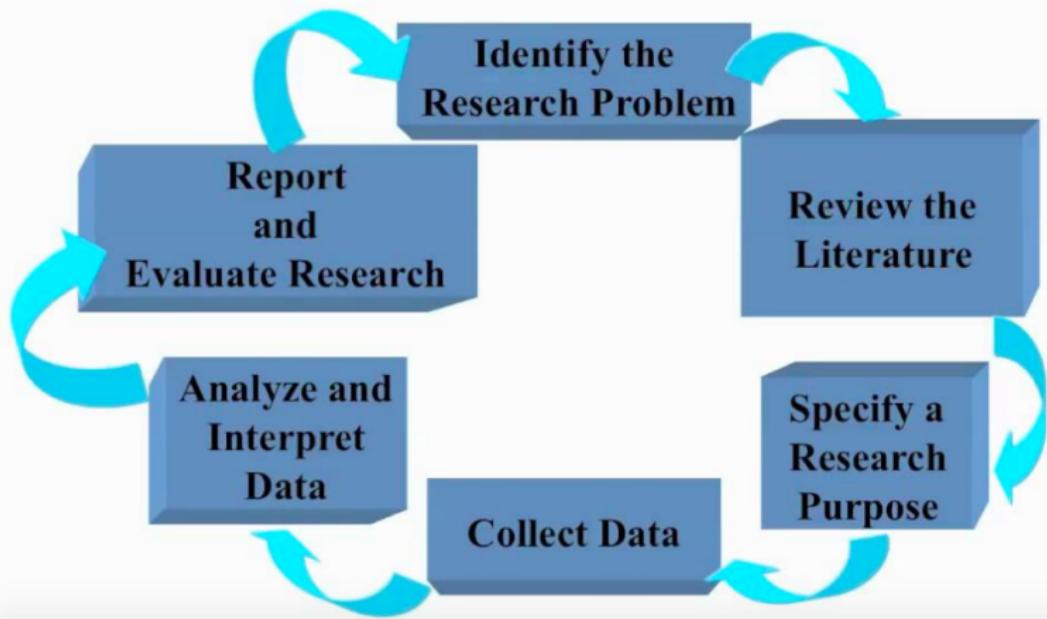
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- What are all these steps??
- How can I use them?

# A Cheery Diagram



- This diagram is more cheery, but the same steps as before?
- I still have the same questions: How can I use these steps?

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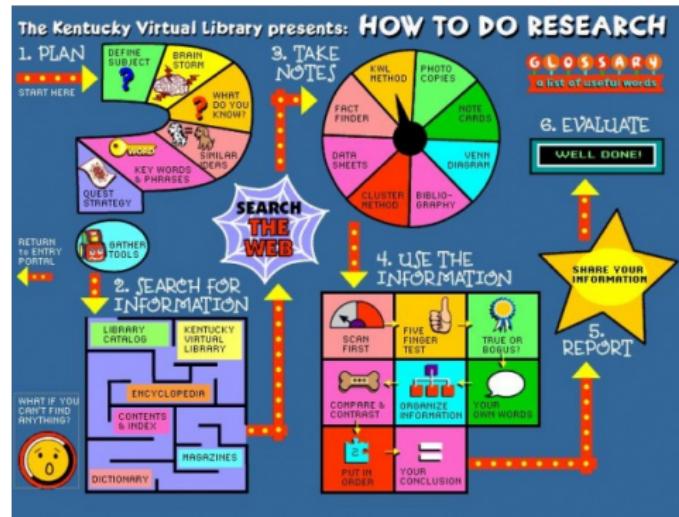


## *Senior Research, the Game Board*

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- *This is really not helping me!*
  - I still have the same questions: How can I use these steps?



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# Information Overload!

I am overwhelmed!

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Learning how to do research from the Internet

- Is almost like taking a drink from a fire-hose



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# Help is Coming!

A class to teach me how to do my own research?

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- This looks like a job for:

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# Articulating the Research Area

We learned this!

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## How to begin a *senior* project ...?

- Decide on a topic: find your *passion-zone*
- Narrow down the area: anything you find in your passion-zone should be fun
  - General Area → reduced topic → Focus area (niche)
  - Ex: Algorithms → Sorting Algorithms → A Novel Sorter
- Lightning talk: *Area of interest*, Assignment 2

# Background Research

## Literature

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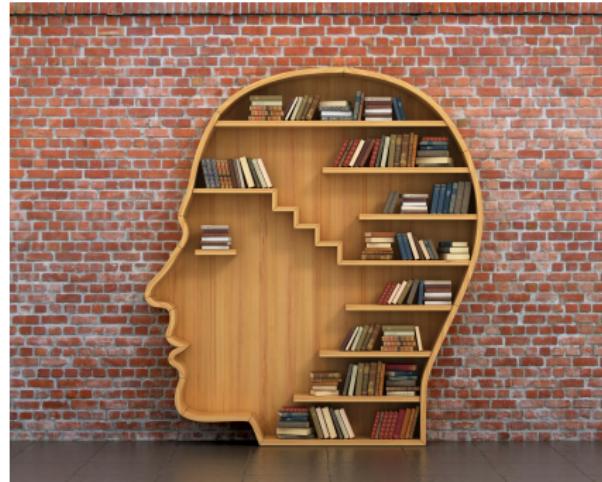
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### What is already known about my area?!

- Literature Review
  - What is known from peer-reviewed studies in this area?
  - How can I build on this knowledge?
- *Ideas from Articles, Assignment 3*

# Feasibility

Do background research

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## What else is involved in a project?

- Feasibility

- What are some of the project's associated tools, libraries, software, data and etc?
- Can I access these elements to help in my own project?



## Follow a Research Question

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## How to determine core issues of a project

- What is /are my main focuses?
    - Is there an *over-arching goal* to this work?
    - What will solving this problem do or *look like*?
  - What is /are my secondary focuses?
    - What are further applications to this work?
    - What other types of problems can I now solve, with my solution?

# The Parts of the Proposal

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To get there?

Consider these ...

- What question(s) am I trying to answer?
- Why is my work relevant?
- What kind of approach am I to use to get there?
- How to introduce the details of the written proposal
- How much detail to add?
- When to introduce these ideas?

Some more ideas to consider ...

# Introduction

How do I grab my reader's attention?

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To get there?



- You begin with an outline to organize your thoughts ...
  - How to introduce the project in a way that makes readers continue to read
  - What kinds of supporting documents to include to substantiate the relevance of the project.
  - When should I introduce each of these elements??
- Then we add detail to the outline to *grow-out* the body of text that is the introduction.

# Related Works

What supports my work?

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To get there?



- You begin with an outline to organize your related works section
- This section tells a story of what is known or has been done in your research area.
  - When should I introduce the articles of the related work??  
(It matters!)
  - Then add the details to the outline *grow-out* the discussion.



# The Method and Accessories to the Method

## What approach am I going to use?

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## Finding Methods



- What method (and its associated part) to complete the project and how to link them together?
    - What programming languages? What data? What algorithms? What techniques? What libraries?  
*What-what-what?!*

# So, How Do We Get There?

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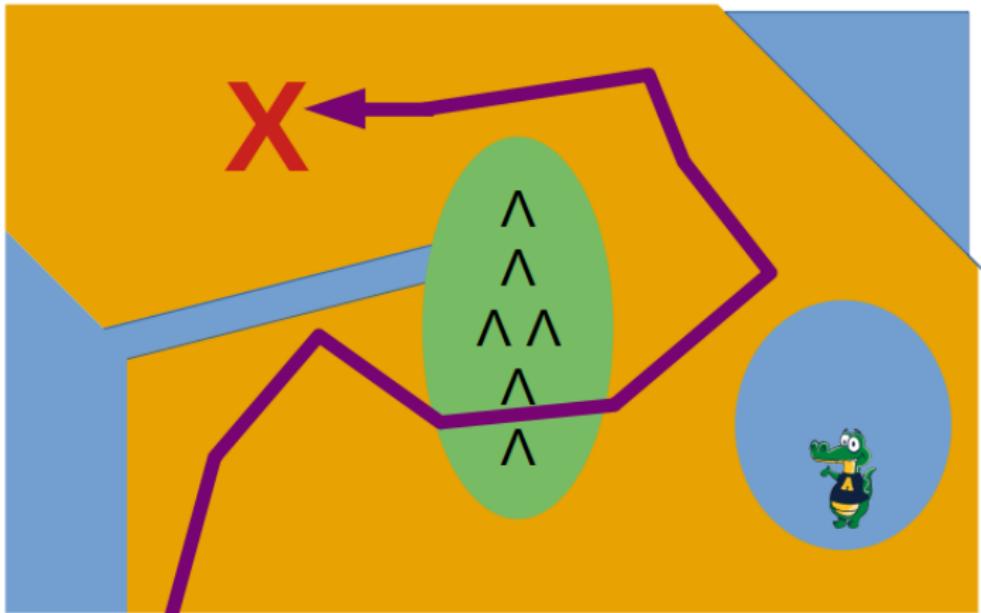
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To get there?



## A map to answer a question

# Given an Idea to Follow

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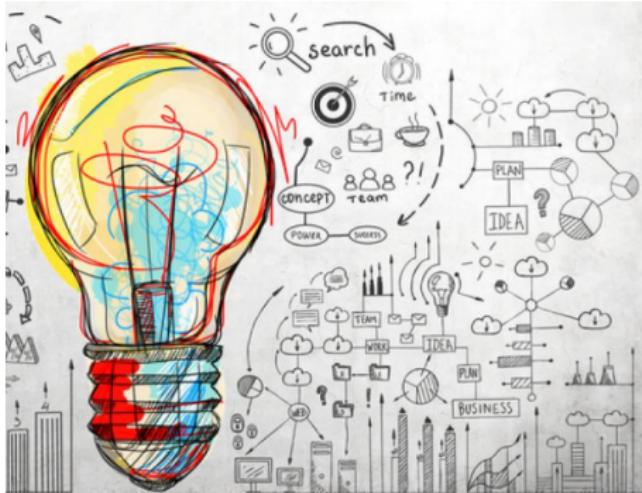
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To get there?



- Given a *feasible* idea in the area of your major
- Pick up the literature, development and all other stages of the research to develop this project

# Then Use your new Skills to Develop Your Own Idea

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To get there?

- By the middle of the semester, you would have gone through most the stages of research and so you will be able to apply the research steps toward **your own research idea.**
- You will need to complete the following steps:
  - Explore a topic, come up with an idea
  - Literature review
  - Create a prototype to demonstrate the feasibility of the project

# Interactions with others

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To get there?



- We will be meeting with department faculty
- Meeting with current comping students (folks from 610) on Fridays
- Meeting with each other in this course!



# Getting to Know You!

## Activity 01

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### Survey

- Please complete the below survey to help me to get to know you better!
- Survey address:  
<https://forms.gle/ChnPifDU4ETRTNiH7>
- This is a checkmark grade

**THINK**