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Today’s Session

1. Being a researcher
   a. Professional communication
   b. Time management
   c. Logging time

2. Using AI in research
   a. Policy framework
   b. Risks and precautions
   c. AI accuracy and bias
   d. AI in the research process overview

3. What projects are you working on?
PROFESSIONAL COMMUNICATION

With faculty, primary investigators, research assistants, graduate students, postdocs, teacher’s assistants, other undergraduates

What is professional communication?

- Responsiveness
- Proactivity
- Asking for clarification of their expectations*
- Collegiality
- Confidentiality - research ethics
- Appropriateness in tone
- Discussion of your boundaries and expectations
TIME MANAGEMENT

- Acknowledge your multiple roles
- Primary role: student
- Time management supports self-care!
- Learn to say no :)
## LOGGING TIME

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<th>Analysis</th>
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LOGGING TIME
Artificial Intelligence in Research
Policies at UofT

- Code of Behaviour on Academic Matters
- Policy on Ethical Conduct in Research
- Statement on Research Integrity

- Generative AI Tools and Copyright Considerations
- ChatGPT and Generative AI in the Classroom
- UofT Libraries Citation Guide for AI Generated Content
Risks

1. What researchers and policy-makers are thinking about: the legal status of copyright and intellectual property (IP) issues of using generative AI
2. What students and RAs need to think about: academic integrity and research integrity

Precautions

→ Talk to your supervisor
→ Disclose the use of AI tools
→ Attribute your work and the extent to which you have used a technology - keep explicit records of your workflow
→ Be mindful of not sharing IP that you don’t have permission to share
AI Bias & Accuracy

“Student Use Cases for AI” - Harvard Business Publishing
https://hbsp.harvard.edu/inspiring-minds/student-use-cases-for-ai

- LLMs don’t have real “understanding”, but fill in what they think comes next based on their training (predictive models)
- Can produce plausible sounding info: Don’t trust it’s output at face value (needs to be verified/ critically evaluated)
- All LLM’s have potential for bias via their training and human intervention
- Do not share anything with LLM’s you want to keep private
Different AI Tools for different research tasks

The research process:

- Literature review:
  - Searching for sources
  - Collecting and organizing source archive
  - Creating a bibliography
- Working with data:
  - Collecting
  - Analyzing
  - Reporting
- Writing:
  - Reports
  - Academic articles

AI in the research process:

→ Literature review tools: (Research Rabbit, Elicit)
  - Geneological search - supplements using research databases & citation managers
→ Data management tools:
  - Many proprietary tools available for industry - don’t recommend this because of IP issues, licensing
→ Writing and revising tools: (ChatGPT)
  - Huge precautions - bias, good prompt writing, academic integrity
Geneological search results:
Try it! researchrabitapp.com
Elicit recommended

Lit review: Explore research questions
Enter a research question, and get back answers from papers

Brainstorm research questions
Brainstorm more specific and related versions of your question

Created by others

Get Independent (Manipulated) Variable and Dependent Variable from Hypothesis, Question, or Statement
For each Hypothesis, Question, or Statement, GPT-3 will find and list the Independent Variable and the Dependent Variable.

Convert “possible critique” citation into a question
Given a citation statement critiquing the methodology of a paper, generate a question that can be used to check other papers for the same limitation

Suggest search terms
Given a word or phrase, suggest related search terms you might want to use to find papers
<table>
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<tr>
<th>Paper title</th>
<th>Abstract summary</th>
<th>Number of participants</th>
<th>Intervention</th>
<th>Outcomes measured</th>
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<tr>
<td>Effects of parent training on infant sleeping patterns, parents' stress, and perceived parental competence.</td>
<td>Training group parents awakened and responded less often to infant signaling.</td>
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<td>behavioral strategies to promote healthy, self sufficient sleep patterns in infants</td>
<td>Infant Sleeping Patterns</td>
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<td>Parents' Stress</td>
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<td>Perceived Parental Competence</td>
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<td>Behavioral Interventions for Infant Sleep Training: Effective and Not Harmful</td>
<td>Graduated extinction and other behavioral interventions have been shown to improve sleep for infants with frequent nighttime waking.</td>
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<td>graduated extinction and bedtime fading</td>
<td>Improvement in Infant Sleep</td>
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<td>Infant And Parent Stress</td>
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<td>The Ethics of Early Life Care: The Harms of Sleep Training</td>
<td>Sleep training is supposed to put babies on a road toward healthy physical outcomes.</td>
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<td>Health And Well Being</td>
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<td>The Effect of Continuous Stimulation on the Behavioral Sleep of Infants.</td>
<td>Sleep does not constitute a period of generalized reduction of neuronal discharge in the brain.</td>
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<td>Sleep and Infant Learning.</td>
<td>Sleep facilitates neural maturation, thereby preparing infants to process and explore the environment in increasingly sophisticated ways.</td>
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FORTHCOMING WORKSHOPS

Nov 6\textsuperscript{th}: 12-1pm - Writing research papers
Nov 15\textsuperscript{th}: 2-3pm - Grad school applications
Nov 20\textsuperscript{th}: 12-1pm - Mentoring

What topics are you interested in?