Leveraging Generative AI for Research Writing and Analysis

# Objectives and Learning Outcomes

## Workshop Objectives

1. Introduce participants to the current landscape of Generative AI tools and their capabilities in academic settings.
2. Teach methods for using Generative AI to generate research ideas, hypotheses, and frameworks.
3. Demonstrate how to use AI to efficiently search, evaluate, and organize relevant literature and citations.
4. Provide strategies for employing AI in drafting, revising, and refining academic texts.
5. Explore AI-driven data analysis techniques to enhance research findings and their presentation.
6. Train participants to use AI for summarizing research materials and findings succinctly.

## Learning Outcomes

By the end of this workshop participants will be able to:

1. Recognize some of the most effective AI tools for academic writing and understand their practical applications in the research process.
2. Use AI to expand on initial ideas and refine them into structured research proposals.
3. Employ AI technologies to automate the process of literature review and citation management.
4. Apply AI suggestions to improve the structure, coherence, and argumentative quality of academic texts.
5. Implement AI tools in the analysis of datasets, producing comprehensible and reportable results.
6. Master techniques for using AI to create concise and informative summaries of extensive research materials

# Workshop Plan (Tentative)

## Introduction (10 minutes)

* Overview of the Workshop: Briefly outline the workshop's objectives and what participants will learn and accomplish.
* Introduction to Generative AI: Discuss the role of Generative AI in academic research, highlighting its potential to transform research practices.

## Session 1: Ideation and Writing with ChatGPT (30 minutes)

* Presentation (10 minutes): Introduce ChatGPT, describing its capabilities in generating text, brainstorming ideas, and drafting preliminary research content.
* Hands-On Activity (15 minutes): Participants use ChatGPT to generate a research topic based on their interests, then begin outlining a research proposal or paper.
* Discussion (5 minutes): Share experiences and ideas generated using ChatGPT. Discuss the tool's effectiveness and limitations in academic writing.

## Session 2: Literature Search with Elicit and ResearchRabbit (30 minutes)

* Presentation (10 minutes): Demonstrate how Elicit and ResearchRabbit can be used to find, analyze, and organize academic papers. Highlight specific features like key information extraction (Elicit) and research discovery (ResearchRabbit).
* Hands-On Activity (15 minutes): Participants perform a literature search on their chosen topics using both tools, comparing their functionalities and results.
* Discussion (5 minutes): Gather feedback on the tools' usability and how they help in streamlining the literature review process.

## Break (10 minutes)

* Short Break: Allow participants to refresh and prepare for the second half of the workshop.

## Session 3: Data Analysis with Google Colab (20 minutes)

* Presentation (5 minutes): Explain the benefits of Google Colab for running Python code, especially for data analysis in academic research.
* Hands-On Activity (10 minutes): Participants use a pre-prepared Colab notebook to analyze a sample dataset related to their research area.
* Discussion (5 minutes): Discuss how the integration of AI in data analysis can enhance research findings and presentation.

## Session 4: Organizing Research with NotebookLM (20 minutes)

* Presentation (5 minutes): Introduce NotebookLM, focusing on its capabilities to organize, summarize, and interact with research notes and documents.
* Hands-On Activity (10 minutes): Participants use NotebookLM to upload and organize their workshop notes and any relevant research documents.
* Discussion (5 minutes): Evaluate how NotebookLM can support ongoing research projects and academic writing by managing and synthesizing large volumes of information.

## Conclusion and Feedback (10 minutes)

* Wrap-Up: Summarize key points learned during the workshop and reiterate how these tools can be integrated into regular research workflows.
* Feedback Session: Collect feedback on the workshop's structure, content, and the tools covered. Discuss any additional needs or suggestions for future workshops.