AI Use in Proposal Development

Enhancing Efficiency, Ensuring Integrity

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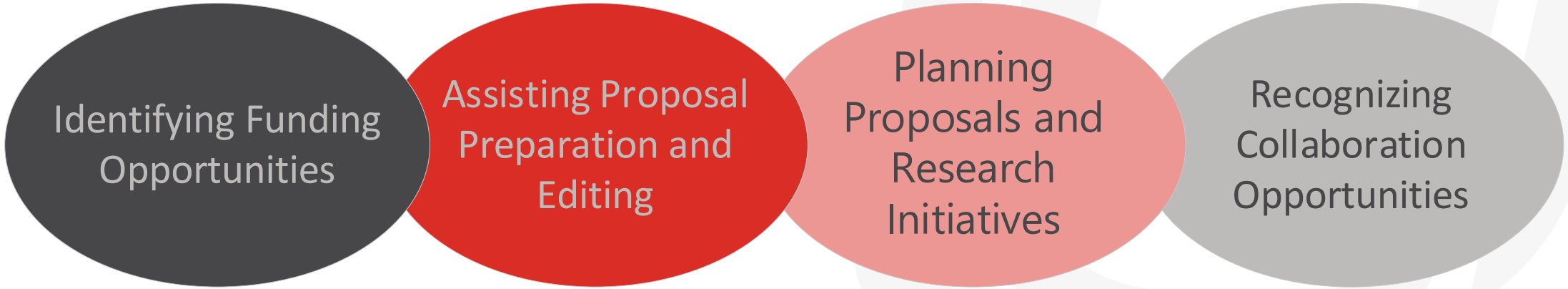
Overview

- Office of Proposal Development in IS&T Research Support
- AI's role in the Office of Proposal Development
- Goals and strategic implementation
- Developing a responsible AI framework
- AI tools for proposal development—creating efficiencies
- Challenges, success, and lessons learned

Office of Proposal Development's Role

Faculty Research Support: Pre-award



AI's Role in the Office of Proposal Development

- Increase operational efficiency
- Automate repetitive tasks
- Improve proposal quality

AI Implementation Goals

- Improve quality and efficiency in proposal development tasks
- Increase funding opportunity matches
- Increase college's research award footprint
- Upskilling proposal development office staff
- Address faculty/stakeholder concerns proactively
- Ensure ethical use of AI in proposal development

Big Questions, Disciplined Approach

Is it ethical to use AI in proposal development? Where is the line between AI-assisted copy-editing and AI contributions?

- These broad ethical questions to be answered by faculty seeking OPD services

To ensure ethical, bounded use of AI

- Disciplined, systematic approach
- Scope and guardrails established in collaboration with faculty
- Develop certain well-defined supplementary artifacts with expert oversight

Strategic Implementation of AI in OPD

Phased approach to AI adoption

Messaging:

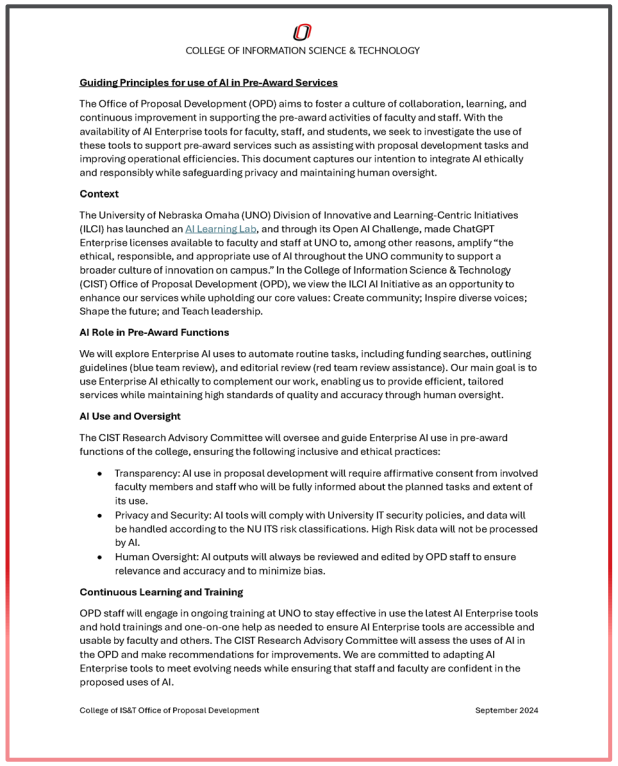
- AI assists PDM for efficiency and quality
- Does not replace human expertise
- Does not generate proposal text
- Transparency and affirmative consent

Measuring Success

- Efficiency: Time saved on tasks
- Quality: Enhanced proposal quality and acceptance rates
- Funding Match: Increased faculty interest in focused funding newsletter (MavOps)
- Trust: Increase in faculty engaged OPD task-load
- Upskilling: Continuous improvement from coursework, webinars, networking, and feedback

Developing a Responsible AI Framework for OPD

AI Guiding Principles for Pre-award Services



COLLEGE OF INFORMATION SCIENCE & TECHNOLOGY

Guiding Principles for use of AI in Pre-Award Services

The Office of Proposal Development (OPD) aims to foster a culture of collaboration, learning, and continuous improvement in supporting the pre-award activities of faculty and staff. With the availability of AI Enterprise tools for faculty, staff, and students, we seek to investigate the use of these tools to support pre-award services such as assisting with proposal development tasks and improving operational efficiencies. This document captures our intention to integrate AI ethically and responsibly while safeguarding privacy and maintaining human oversight.

Context

The University of Nebraska Omaha (UNO) Division of Innovative and Learning-Centric Initiatives (ILCI) has launched an AI Learning Lab, and through its Open AI Challenge, made ChatGPT Enterprise licenses available to faculty and staff at UNO to, among other reasons, amplify "the ethical, responsible, and appropriate use of AI throughout the UNO community to support a broader culture of innovation on campus." In the College of Information Science & Technology (CIST) Office of Proposal Development (OPD), we view the ILCI AI Initiative as an opportunity to enhance our services while upholding our core values: Create community; Inspire diverse voices; Shape the future; and Teach leadership.

AI Role in Pre-Award Functions

We will explore Enterprise AI uses to automate routine tasks, including funding searches, outlining guidelines (blue team review), and editorial review (red team review assistance). Our main goal is to use Enterprise AI ethically to complement our work, enabling us to provide efficient, tailored services while maintaining high standards of quality and accuracy through human oversight.

AI Use and Oversight

The CIST Research Advisory Committee will oversee and guide Enterprise AI use in pre-award functions of the college, ensuring the following inclusive and ethical practices:

- Transparency: AI use in proposal development will require affirmative consent from involved faculty members and staff who will be fully informed about the planned tasks and extent of its use.
- Privacy and Security: AI tools will comply with University IT security policies, and data will be handled according to the NU ITS risk classifications. High Risk data will not be processed by AI.
- Human Oversight: AI outputs will always be reviewed and edited by OPD staff to ensure relevance and accuracy and to minimize bias.

Continuous Learning and Training

OPD staff will engage in ongoing training at UNO to stay effective in use the latest AI Enterprise tools and hold trainings and one-on-one help as needed to ensure AI Enterprise tools are accessible and usable by faculty and others. The CIST Research Advisory Committee will assess the uses of AI in the OPD and make recommendations for improvements. We are committed to adapting AI Enterprise tools to meet evolving needs while ensuring that staff and faculty are confident in the proposed uses of AI.

College of IS&T Office of Proposal Development September 2024

- Transparency
- Privacy and security
- Human oversight
- Continuous learning
- Annual review

Stakeholder trust through transparency and oversight

AI Tools in Action: ChatGPT 4o

Brainstorming

- Vocabulary, acronyms, webpage design, ways to use AI in my job
- Scoping topics and suggesting appropriate flow for presentations
- Crafting email announcements, news blurbs, website content
- Suggesting software for tasks or sources for information and training

Quick-planning

- Timelines and important steps

Outlines and checklists

AI Tools in Development: Custom GPTs

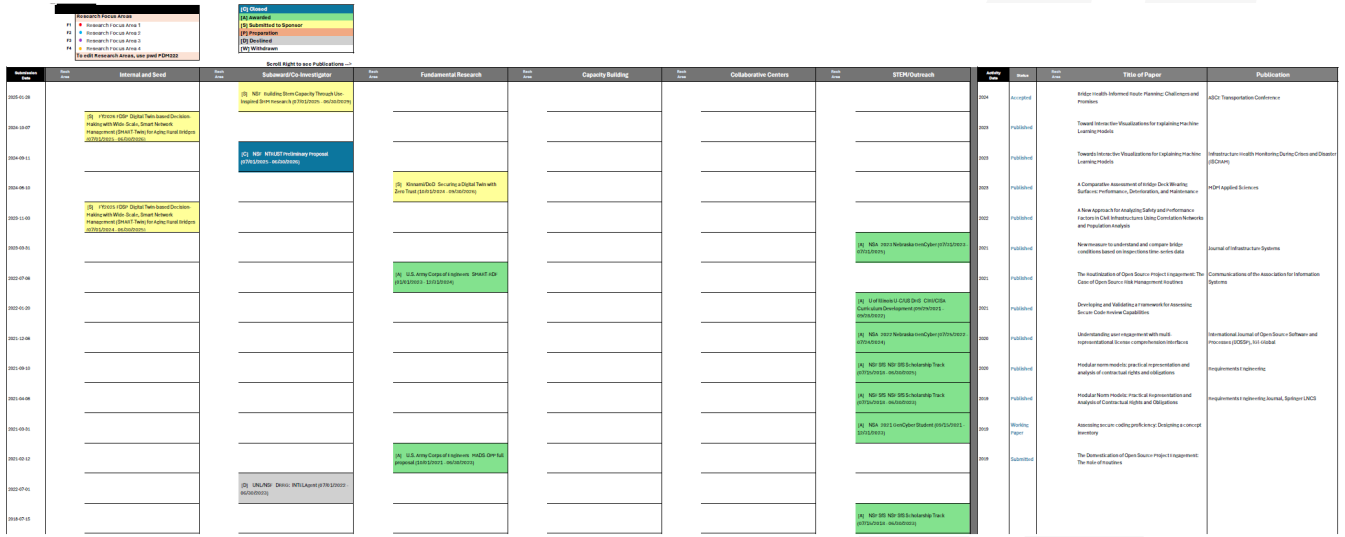
Boilerplate Proposal Sections

- Data Management and Sharing Plan (near deployment)
- Facilities and Resources (in development)
- Student Mentoring Plan (in development)

Specialized modification to standard funding sources

- NSF PAPPG
- NIH SF-424

Custom GPT: SPARK Dashboard



Identify researcher areas of focus

- **SP**onsored **A**ctivities and **R**esearch coordination **K**it

Custom GPT: SPARK Output

SPARK Dashboard Research Focus

Based on my analysis of your **SPARK dashboard** and its research activities, your key **research focus areas** are:

1. **Digital Twin Technology & Infrastructure Health Monitoring** – Several projects and publications focus on using **Digital Twins** for decision-making, network management, and infrastructure monitoring, particularly for aging rural bridges.
2. **Cybersecurity & Secure Software Development** – Your awarded projects and publications include work on **Zero Trust security models**, **secure coding proficiency assessment**, and **secure code review frameworks**.
3. **Artificial Intelligence & Machine Learning Explainability** – You have publications related to **interactive visualizations for explaining machine learning models**, which aligns with broader AI-driven research.
4. **STEM Education & Outreach** – Multiple awarded projects, such as the **Nebraska GenCyber programs**, indicate significant involvement in cybersecurity education and training.

Let me know if you'd like further refinement or additional insights!

Human in the Loop

Proposal Writing Guideline

Formatting and Page Guidelines

- Font & Spacing: 12-point font, double-spaced.
- Style: APA preferred.
- Word Limit: Word-count and page limits on required sections detailed below.
  - 1,800-word limit applies to the Proposal Narrative only.
  - Tables/figures and list of references do not contribute to the word count. Tables/figures do need to be described in the text, though.

Proposal Narrative (~6 pages/1,800 words max, single pdf)

Word counts for sub-sections are suggestions, not specified in solicitation.

Project Description (~1 page / 300-400 words)

- Clearly state the research questions.
- Provide a high-level overview of the study's purpose and significance.
- Highlight how the project aligns with current educational challenges and research gaps.

Rationale (~1.5 pages / 500-600 words)

- Summary of relevant literature:
  - What has been studied in this area?
  - Where are the gaps this study will address?
  - How does this research build on or challenge existing knowledge?
- Conceptual Framework/Theory:
  - Clearly define the theoretical lens guiding the study.
  - Explain how this framework informs research design and expected findings.

Research Methods (~2 pages / 600-800 words)

- Methodological Approach: Describe whether the study is quantitative, qualitative, mixed-methods, or participatory.
- Participants & Sampling Strategy: Describe population, recruitment, and inclusion criteria.

- AI assists, does not replace specialized technical and analytical skills
- AI-generated text requires human oversight and editing

Professional Practice: Accommodating Individual Preferences

Ultimately, faculty seek OPD's support for a specialized skillset, and preferences for AI use in pre-award services vary for many reasons

- Adoption: Some researchers may be receptive to our use of some or all of the tools; others prefer we rely on the human expertise for all proposal tasks
- Security: Many prefer to keep novel research ideas out of AI tools, so we default to unassisted editorial review of proposal content
- Authenticity: Concerns about perception of authenticity if there is any attribution for AI-generated text
- RFP Guidelines: Some proposal reviewers may oppose AI use, or at some point funders may ban its use altogether in proposal development

Summary of AI Implementation in OPD

Growing trust

- Collaborating on AI use policy or guidelines
- Affirmative Consent

Creating efficiencies to increase research support capacity

- Focus on operational tasks
- Build custom GPTs for supplementary documents

Continually refine AI tools and processes based on success metrics and feedback

Next Steps

- Present implementation progress at next All-College meeting
- Continuous collaboration with faculty
  - Use-cases for pre-award services
  - Address concerns and questions
- Refining AI-assisted tools
- Tracking metrics
- Expanding use-cases

Reflections and Closing Thoughts

Six months into the OpenAI Challenge:

- The AI Advantage: Transforming Teaching and Preparing Students to Thrive
  - Learned how to “talk” to the chatbot for improved output
  - Activities foundational to developing strategic and ethical frameworks
  - Networking to explore use cases and give and receive feedback
- Developed ethical guardrails in collaboration with research faculty
- Developed strategic implementation plan
- Tools for supplementary documents
- Tools for deeper analysis—research focus

Avoid overreliance; continue to provide expertise in specialized support role

Questions or Comments?

This overview cannot capture the exciting journey of innovation we have been on by participating in the OpenAI Challenge!!

Thank you for attending.

Feedback and Questions are welcome.

Feel free to reach out to me if we don't have time in this forum.

AI is a great tool to enhance the specialized expertise we offer!

CIST Office of Proposal Development

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