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IT Operations Office

Guidelines for the use of GENerative Artificial Intelligence (Gen-AI) at the International Space University (ISU)

Broad Purpose

This document is describing the proper use of Generative Artificial Intelligence (Gen-AI) at the International Space University (ISU per August 2023). *This is a dynamic document.*

Credits

The ISU would like to pay tribute to the work done by ISU Community members in collaborating in the production of the Gen-AI guidelines.

Preamble

Gen-AI will accelerate the process of digital transformation in education. All stakeholders (students, teachers, academia) need better insight into the impact of Gen-AI on both the educational journey and on our daily life.

The "Guidelines for the Use of Generative AI at the International Space University" applies to all ISU program participants, faculty and staff.

The purpose of these guidelines is to provide a clear framework for the ethical and responsible use of Gen-AI tools in academic settings. Furthermore, these guidelines direct users in their interaction with Gen-AI tools to ensure academic integrity and to promote the understanding and effective use of Gen-AI in advancing education and research.

Due to the fast pace of development of Gen-AI tools this is a dynamic document and will be regularly updated.

Scope

As ISU embraces advancements in AI technologies, ISU recognizes the profound impact that Gen-AI, like ChatGPT and other emerging tools, can have on education. The rapid innovation of the AI field makes it impossible to provide a rigid set of rules. For this reason, these guidelines aim to provide ISU program participants, faculty and staff with basic principles for ethical, responsible, and effective use of AI tools in an academic environment.

Use of AI at the International Space University

Institutional Values

At the institutional level, the ISU has established values regarding the utilization of AI and data within the teaching and learning environment. These values and best practices are aligned with the success of our distinctive educational approach (see Appendix A).

- **Equity and Inclusion:** Ensuring fair and equal access to educational Gen-AI resources, and promoting unbiased implementation of AI tools, minimizing technology-driven disparities among program participants of diverse backgrounds.

- **Enhanced Learning Experience:** Using Gen-AI to create personalized and engaging learning experiences that empower ISU program participants to learn at their own pace, explore diverse learning paths, and achieve deeper understanding.

- **Ethical Use of Data:** Upholding principles of data privacy and security, ensuring transparent data collection and usage, and safeguarding sensitive information to maintain the trust of ISU program participants, faculty, and stakeholders.

- **Innovation and Research:** Embracing Gen-AI's potential to advance research, drive innovation, and enable new discoveries across various academic disciplines (while adhering to ethical guidelines and responsible research practices).

- **Collaboration and Engagement:** Fostering collaborative environments that leverage Gen-AI to connect program participants, faculty, researchers and ISU Community members globally, enabling cross-disciplinary partnerships and knowledge sharing for mutual growth and academic excellence.

See Use Cases in Appendix B.

ISU Faculty

As ISU Faculty embrace the transformative potential of Gen-AI in education, their attention will be particularly directed to:

- **Experiment and learn about Gen-AI tools** - ISU Faculty may experiment with Gen-AI tools to input assignment prompts and assess accuracy. They should then explore integration or alternative approaches, involving ISU program participants in the reflection process for a valuable learning experience on the advantages and limitations of such tools.

- **Explain Gen-AI tools explicitly in class** - Engage ISU program participants in collaborative discussions to establish learning goals and criteria for using Gen-AI tools, emphasizing critical thinking and digital literacy. Address academic integrity through clear guidelines and a syllabus statement, and foster conversations about ethical concerns and limitations of Gen-AI to ensure a shared understanding of risks and benefits.

- Craft assignments that challenge Gen-AI's capabilities and ensure clear instructions for proper citation and referencing of Gen-AI tools. Program participants should be required to explain how they utilized these tools in their work and foster oral communication skills through in-class presentations or discussion sections to enrich the learning experience.

- Implement original assessments by adopting formative practices, such as draft submissions for review and feedback, involving teachers, peers, or self-assessments. This approach enhances student development, fosters critical evaluation, and helps detect plagiarism, promoting a more genuine assessment process.

See Use Cases in Appendix B.

ISU Program participants

For program participants, using Gen-AI (judiciously) is essential because it serves as a tool for acquiring a new skillset.

- ISU program participants are encouraged to use Gen-AI to improve the learning experience.

- **Permitted uses** include, but are not limited to tasks such as study, practice, self-evaluation, foreign language learning, tutoring, correcting grammar of report text, and so on. It is also permitted to use Gen-AI to create charts, illustrations, and visual assets, provided that the tool's terms and conditions of use grant free use and do not infringe on copyright laws.

- You must get written permission from the relevant faculty members and ISU Designated Arbiter to use Gen-AI for assignments, presentations, team projects, and other academic assessments. Possible tasks include brainstorming, literature review, data analysis, translation, drafting, editing etc. The Arbiter will be designated by the Dean.

- **The use of Gen-AI tools or other similar resources for answering exam questions, writing exam essays, or final Team Project reports (except for grammar check) is strictly prohibited. Any use of Gen-AI to generate large portions of text (excluding the use of Gen-AI for grammatical correction) is forbidden because it may be construed as plagiarism, aka an attempt to pass Gen-AI-generated text as the student's own original work.**

See Use Cases in Appendix B.

Academic Integrity and Generative AI

At ISU, academic integrity is a fundamental principle that guides our academic endeavors. It is the cornerstone of research, teaching and learning, and applies to all members of our global community, including ISU program participants, faculty, and staff.

In the context of generative AI usage, academic integrity means:

- Using Gen-AI tools responsibly and ethically, acknowledging when and how these tools were used in your work and not using these tools to commit plagiarism or other forms of academic dishonesty.

- Verifying accuracy and validity of the information generated by these tools.

- Practicing honesty and personal responsibility. Using Gen-AI tools dishonestly to complete assignments or projects does not ultimately benefit ISU program participants. Therefore, all ISU program participants should understand that the primary purpose of their education is to continually cultivate personal knowledge, skills, and academic growth. Gen-AI tools can greatly enhance the learning experience when used responsibly and honestly.

ISU program participants are asked to sign an honor pledge:

Example: *All ISU program participants shall conduct themselves in accordance with the highest principles of academic honesty. Cheating, plagiarism, copyright violations or other forms of dishonesty are prohibited and will not be tolerated. The use of Gen-AI tools or other similar resources for answering exam questions, writing exam essays, white papers or final Team Project reports is strictly prohibited. Each examination/project/report will be evaluated by a dedicated software for plagiarism, in addition to being processed through advanced Gen-AI tools.*

Example: *"I affirm that I will not give or receive any unauthorized help on this exam, and that all work will be my own."*

Important notes:

● **Disclosure**: If you use Gen-AI tools to develop a document, you must provide an Appendix disclosing what platform and plug-ins you used, and explaining how you used the tool in each step of your workflow (see Appendix B for an example)

● **Referencing**: It is your responsibility to verify the correctness of, and provide the primary sources for anything that is written in your document, irrespective of who or "what" wrote it.

● **Documentation**: It is essential to preserve the chat logs in case of controversy.

● **Consequences of violation**: Violations of academic integrity related to the use of Gen-AI are treated seriously and can result in academic penalties. Potential outcomes of academic misconduct can include written cautions, a reduction of marks, revocation of financial aid and/or tuition waivers, suspension or termination of studies, and revocation of a degree or qualification already awarded.

Conclusion

As we venture forward into the era of Gen-AI, let us each make a personal commitment to uphold our academic values. Let's leverage these tools for learning, research, and innovation with persistent integrity, transparency, and a quest for knowledge.

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Appendix A: Institutional Values

The ethical use of Generative Artificial Intelligence (Gen-AI) in academia for institutional communication is crucial to ensure that the technology is used responsibly, transparently, and in a manner that respects individuals' rights and maintains the institution's integrity.

- **Transparency and Disclosure:** Clearly communicate to external audiences, including ISU program participants, stakeholders, and the public, when AI-generated content is being used.

- **Authenticity and Attribution:** Ensure that AI-generated content is appropriately attributed and distinguished from human-generated content. Avoid misleading or deceiving audiences into believing that AI-generated content was created by humans.

- **Privacy and Data Protection:** Safeguard personal data and sensitive information when using Gen-AI for external communication. Adhere to data protection regulations and obtain consent when collecting and using personal information.

- **Bias Mitigation and Fairness:** Continuously monitor and address biases in AI-generated content, especially in social communication, to prevent reinforcing stereotypes or discriminatory practices. Train the Gen-AI models on diverse and representative datasets.

- **Quality Control and Review:** Implement rigorous quality control measures to review and edit AI-generated content before it is shared externally. Human oversight is essential to ensure accuracy, relevance, and appropriateness.

- **User Consent and Preferences:** Respect user preferences regarding the use of AI-generated content. Allow users to opt-out or customize their interactions with AI-generated materials.

- **Accountability and Responsibility:** Clearly define roles and responsibilities for using Gen-AI. Establish accountability for the content generated by Gen-AI.

- **Mitigating Misinformation:** Be cautious about using Gen-AI to create content that could potentially spread misinformation or fake news. Ensure that AI-generated information is accurate and verified.

- **Engagement and Empathy:** While Gen-AI can assist in responding to external queries, maintain a balance by incorporating human interactions to show empathy and understanding, especially in sensitive or emotional situations.

- **Long-Term Impact:** Consider the long-term implications of using Gen-AI. Monitor how Gen-AI content impacts audience perceptions, engagement, and trust over time.

- **Ongoing Monitoring and Iteration:** Continuously monitor the performance and impact of Gen-AI content. Regularly update and improve Gen-AI models to align with evolving ethical standards and audience preferences.

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- **Public Awareness and Education:** Educate stakeholders about the use of Gen-AI, explaining its benefits and limitations. Promote awareness of how Gen-AI is being used to ensure transparency.

- **Protect confidential data:** You should not enter classified data as confidential, including non-public research data, into publicly-available Gen-AI tools. Information shared with Gen-AI tools using default settings is not private and could expose proprietary or sensitive information to unauthorized parties.

By adhering to these ethical considerations, we can harness the power of Gen-AI to enhance our values by maintaining trust, authenticity, and respect for individuals' rights and values.

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Appendix B: Use Cases of Generative AI

Institutional Use Cases

The use of Gen-AI in academia for internal communications can significantly enhance efficiency, collaboration, and innovation.

Here are some ways Gen-AI can be employed in ISU's institutional setting:

- **Automated Content Generation:** Gen-AI can help create internal communication materials such as newsletters, announcements, and reports. It can generate summaries of complex research papers, compile meeting minutes, and draft emails, saving time for faculty and staff.

- **Natural Language Processing (NLP) Chatbots:** Implement NLP-powered chatbots to answer common queries from ISU program participants, faculty, and staff. These chatbots can provide information about schedules, events, policies, and administrative procedures, reducing the burden on administrative personnel.

- **Virtual Assistants for Scheduling:** Use Gen-AI virtual assistants to help schedule meetings, coordinate events, and manage appointments for faculty and staff. These assistants can analyze calendars, preferences, and availability to propose optimal meeting times.

- **Language Translation and Accessibility:** Gen-AI can facilitate multilingual internal communication by providing real-time translation services. This ensures that information is accessible to a diverse audience within the academic community.

- **Personalized News and Updates:** Gen-AI can analyze user preferences and past interactions to curate personalized news feeds, updates, and relevant announcements for individual faculty members, researchers, or ISU program participants.

- **Collaborative Content Creation:** Use Gen-AI tools to facilitate collaborative writing and content creation among faculty members, enabling real-time editing, suggestions, and version tracking.

- **Data Analysis and Insights:** Gen-AI can analyze large datasets to extract insights and trends from academic research, student performance, and administrative processes. This data-driven approach can inform decision-making and strategic planning.

- **Automated Surveys and Feedback Analysis:** Deploy Gen-AI to design and distribute surveys to gather feedback from faculty, staff, and ISU program participants. Gen-AI can also analyze the responses to extract meaningful insights.

- **Training and Onboarding:** Utilize Gen-AI to develop interactive training modules and onboarding materials for new faculty and staff members. This can expedite the orientation process and ensure consistent information delivery.

- **Content Summarization and Review:** Gen-AI can help summarize lengthy documents, research papers, or meeting transcripts, making it easier for stakeholders to quickly grasp essential information.

- **Emergency Notifications and Alerts:** Gen-AI can automate the distribution of emergency alerts, notifications, and safety procedures to ensure the safety and well-being of everyone on campus.

- **Predictive Analytics:** Gen-AI algorithms can predict potential challenges and opportunities based on historical data, aiding in proactive decision-making and resource allocation.

Academic Use Cases

Here are some use cases where Gen-AI can be employed in ISU's academic setting:

- **Practice and Study**: Gen-AI could be used to create practice questions or flashcards for studying. It could also generate explanations or breakdowns of complex topics to aid understanding.

- **Foreign Language Learning**: Gen-AI can be used to create language learning exercises and provide language translation and language practice opportunities for ISU program participants learning a new language.

- **Tutoring**: Gen-AI can serve as a personalized tutor for ISU program participants, helping them understand complex topics by providing explanations, examples, and answering questions.

- **Brainstorming**: ISU program participants can use Gen-AI to generate ideas for papers, projects, or research topics. They can provide a seed topic and the Gen-AI can generate related topics, questions, or perspectives that the participant might not have considered.

- **Drafting and Editing**: Gen-AI can help with the creation of initial drafts and the editing process. ISU program participants can provide an outline or main ideas, and the Gen-AI can help fill in the details. It can also help with grammar and syntax corrections.

- **Literature Review**: Gen-AI could potentially assist with literature reviews by summarizing articles, papers, or books. It could also suggest relevant resources based on the topic being researched.

- **Data Analysis**: In quantitative subjects, Gen-AI could help analyze and interpret data, making predictions or identifying patterns that could provide new insights for a research project.

- **Generation of charts, illustrations, and visual assets**: Gen-AI can be used to generate any kind of visual asset to improve papers, reports, and presentations (please review the tool's terms and conditions of use to ensure that there is no copyright violation).

Appendix C: Sample Disclosure Statement

When employing Gen-AI tools during the development of an academic document, it is mandatory to include an Appendix that discloses the specific platform and plug-ins used. Additionally, a comprehensive explanation of how the tool is incorporated at each stage of the workflow should be outlined. It is vital to break down the process and to provide an example of the prompts that are used. The template provided below serves as a foundational guide for drafting a disclosure statement. Please consult with the relevant faculty members to validate your approach.

Moreover, alongside the disclosure, users must be prepared to provide logs of the interactions with the Gen-AI system. These logs serve as a testament to the adherence to the boundaries set out in this document. Essentially, a log is a copy of the entire conversation held between the user and the Gen-AI tool for a particular chat.

Sample Disclosure

For this project, we have incorporated the use of Open AI's ChatGPT for brainstorming, content creation, content validation, and editing.

Brainstorming

In the brainstorming phase, we sought suggestions from ChatGPT regarding [subject]. Our process entailed:

● [Step 1]

● [Step 2]

The prompts used during this phase were:

● [Example 1]

● [Example 2]

Content Creation

We utilized ChatGPT for [EXPLANATION] during the content creation phase. Our process involved:

● [Step 1]

● [Step 2]

The prompts used during this phase were:

- [Example 1]

- [Example 2]

Content Validation

ChatGPT was deployed for the purpose of commenting, critiquing, and validating our content. Our process comprised of:

- [Step 1]

- [Step 2]

The prompts used during this phase were:

- [Example 1]

- [Example 2]

Editing

ChatGPT was instrumental in the editing and enhancement of our content. Our process included:

- [Step 1]

- [Step 2]

The prompts used during this phase were:

- [Example 1]

- [Example 2]

In summary, if Gen-AI tools are used to develop a document, a disclosure must be provided in the Appendix where it is specified what platform and plug-ins were used, and an explanation how the tool was used in each step of your workflow. ChatGPT enables sharing a link to a particular chat, and that chat only, thereby solving issues of privacy.

Appendix D: Limitations of Generative AI

While Gen-AI tools are powerful, they are not perfect. They can produce incorrect or biased answers based on the original data and model used by the respective Gen-AI tool.

Always double-check answers against other sources, especially in these areas:

- **Lack of Contextual Understanding:** Gen-AI tools don't truly understand the context in the way humans do. They analyze the text based on patterns they've learned, but they don't have real-world experience or awareness to provide context.

- **Lack of Creativity and Original Thinking:** Gen-AI tools, while capable of generating novel combinations of learned patterns, don't truly create original thoughts or ideas in the same way a human does.

- **Dependence on Quality of Input:** The quality of the output from a Gen-AI tool is highly dependent on the quality of the input it receives. "Garbage in, garbage out".

- **Inability to Verify Facts:** Gen-AI tools can't verify the truthfulness of the information they generate. They may produce content that is grammatically correct and sound plausible, but it could be factually incorrect.

- **Ethical Considerations:** Gen-AI doesn't inherently understand human values or ethics. Misuse can lead to ethical issues such as plagiarism or the propagation of misinformation.

- **Tendency to Overgeneralize:** Gen-AI models may overgeneralize from the data they've been trained on, leading to potential bias, or stereotyping in their responses.

- **Inability to Explain Reasoning:** Gen-AI tools, especially those based on complex models, often can't explain the reasoning behind the answers they provide. This lack of transparency can make it hard to determine how they arrived at a particular output.

- **Next-word-prediction paradigm:** The model operates on a next-word-prediction paradigm, which means it only generates the next word, and currently, it has no mechanism to revise or modify its previous output. Some of these limitations could be solved by providing specific prompts, which are called "prompt engineering." However, the inherent flaw is not solved yet.

- **It generates errors without warning:** Erroneous references, content, and statements may be intertwined with correct information and presented in a persuasive and confident manner, making their identification difficult without close inspection and effortful fact checking. Therefore, it still requires extensive efforts to search and fact-check the generated content. You cannot rely on ChatGPT-generated content for research, learning, and education.

- **Bias:** All users need to be aware of the inherent bias of these Gen-AI tools since the GPT models are trained on data from the public internet. Among these data sources, they are riddled with various sources of inherent bias. Large language models may perpetuate or amplify existing bias.

Appendix E: Glossary

- **Generative AI:** A type of artificial intelligence that can create new, previously unseen content. This could be anything from text, like a language model generating sentences, to images, like an AI creating original art.

- **Traditional AI vs Generative AI:** Traditional AI lacks the ability to adapt and learn from data on its own. Gen-AI, involves training a machine learning model to generate new content that is similar to a set of training data.

- **ChatGPT:** A type of Gen-AI model developed by OpenAI, specifically designed for generating human-like text. GPT stands for "Generative Pretrained Transformer".

- **Prompt:** In the context of ChatGPT and other conversational Gen-AI models, a "prompt" is the input or instruction given to the AI, which guides its response. Prompts can take various forms, such as a question, a sentence to complete, or a topic to generate content about. The model generates a response based on its understanding of the prompt, built on the patterns it learned during training.

- **Machine Learning:** An application of Gen-AI that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

- **Deep Learning:** A subset of machine learning that uses neural networks with many layers (hence 'deep') to analyze various factors with a structure similar to the human brain. Deep learning models can learn from their own mistakes, improving their accuracy over time.

- **Neural Networks:** Computing systems vaguely inspired by the biological neural networks constituting animal brains. These systems learn to perform tasks by considering examples, generally without being programmed with task-specific rules.

- **Natural Language Processing (NLP):** A subfield of AI focused on the interaction between computers and humans through natural language. The ultimate objective of NLP is to read, decipher, understand, and make sense of human language in a valuable way.

- **Large language models (LLM):** A large language model (LLM) is a type of machine learning model that can perform a variety of natural language processing (NLP) tasks such as generating and classifying text, answering questions in a conversational manner, and translating text from one language to another.

- **Training Data:** Data used to train a Gen-AI model. The model uses this data to learn and make predictions or decisions without being specifically programmed to perform the task.

- **Bias in AI:** Bias in AI, specifically in machine learning algorithms, is often a result of either biased training data or biased decisions made during the development process. This can lead Gen-AI to make unfair or discriminatory decisions.

- **Plug-ins:** Software components that add a specific feature to an existing software application. In the context of AI, plugins might offer additional functionality, such as specialized language models, data analysis capabilities, and so on.

- **Workflow:** This term refers to the sequence of processes through which a piece of work passes from initiation to completion. In the context of this document, it refers to the various steps taken when working on a project or assignment, like brainstorming, drafting, and editing.

- **Brainstorming:** A method of generating ideas for a project or problem. It involves spontaneously thinking of and sharing ideas in a free-flowing, non-judgmental manner.

- **Literature Review:** This is a survey and analysis of scholarly sources on a particular topic. It involves reading, summarizing, and synthesizing existing research on the topic to provide an overview of what's currently known and to identify gaps that new research could fill.

- **Data Analysis:** The process of inspecting, cleaning, transforming, and modeling data to discover useful information, draw conclusions, and support decision-making.

- **Academic Integrity:** Ethical policies and moral code upheld in academic settings. It includes principles like honesty, fairness, trust, respect, and responsibility in learning.

- **Academic Violation:** Any action that breaches the rules of academic integrity, such as plagiarism, cheating, or fabrication of data.

- **Plagiarism:** The practice of using someone else's work or ideas without giving them proper credit, presenting it as one's own. This is considered a serious ethical violation in academia.

Sources

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