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Using Generative AI to Improve the Research Experience of MS Students in Robotics

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Abstract:
The Minnesota Robotic Institute at the University of Minnesota's Master's program in Robotics, located in the United States, prepares students for professional careers focused on research and innovation within both academic and industrial sectors. The curriculum prioritizes applied learning methodologies through research initiatives and problem-solving exercises, enabling students to tailor elective courses to their interests. Each participant is required to complete either a capstone project or a research thesis. The program, which spans three semesters, commences with rigorous coursework and culminates in a comprehensive final project. Students opting for a thesis engage in advanced research endeavors, while those fulfilling the capstone requirements exercise considerable autonomy in designing and disseminating their projects. The increasing appeal of this experiential, student-centered model has led to a rise in enrollment, presenting challenges in maintaining personalized faculty oversight. In response to these developments, the program has investigated the application of various Generative AI (GenAI) tools to enhance student learning experiences. This study analyzes survey responses collected from 19 Master of Science students in the robotics program, elucidating the prevalent use of Generative AI tools, particularly ChatGPT, for tasks involving coding and writing. Additionally, it highlights significant ethical considerations, including the spread of misinformation and the lack of established usage guidelines. Many respondents support the incorporation of Generative AI into the curriculum, provided that apparent limitations are established. They emphasize the need for formal training and updates to the academic curriculum to effectively leverage the benefits of such technologies while minimizing associated risks.

Introduction:
Generative AI (GenAI) utilizes sophisticated algorithms to produce human-like content across various formats, including text, image, audio, and video [1]. Following the introduction of ChatGPT in 2022, GenAI has gained considerable prominence across various sectors, including education, healthcare, and technology [2]. In higher education, opinions regarding the integration of GenAI remain divided. Whereas some faculty members endorse its incorporation within instructional frameworks, others contend that it diminishes students' critical thinking and cognitive development [3,4]. Furthermore, additional challenges encompass algorithmic bias, data privacy issues, and the spread of misinformation [5].

The fields of robotics and artificial intelligence have historically maintained a symbiotic relationship [6]. With the increasing demand for expertise in these domains, it has become essential to develop robust academic programs that adequately prepare students for interdisciplinary roles. A comprehensive curriculum in robotics at the master's level fosters proficiency in both hardware and software integration. Nevertheless, as enrollment surpasses 130 students, the limited availability of faculty mentors poses challenges for individualized guidance, particularly in terms of selecting research topics and executing projects.

This paper examines the engagement of graduate students in a robotics program with Generative AI tools. Through a survey assessing the frequency of use among students, we aim to inform the development of evidence-based strategies for educational policy by gathering insights into their objectives for using Generative AI, their ethical considerations, such as concerns about misinformation and policy ambiguities, and their recommendations for integrating Generative AI into the curriculum. Understanding student behavior and perceptions is crucial; prior research

indicates that students predominantly maintain favorable attitudes toward applying Generative AI in academic contexts; however, they also raise valid concerns regarding accuracy and ethical dilemmas. Our study offers quantitative insights into usage trends and qualitative perspectives on student recommendations, with a strong focus on a graduate-level STEM environment. The findings may serve as a foundational guide for robotics educators in enhancing course design, formulating policies for the use of Generative AI, and providing training that leverages the benefits of Generative AI while maintaining academic integrity.

Methodology:

Survey Design: A structured survey titled "Generative AI in the Robotics Graduate Program" was conducted using Google Forms. The survey was divided into five sections: (1) Background Information, which gathered respondents' program years (first, second, or final semester) and academic paths (Research Thesis or Capstone Project); (2) Usage of GenAI Tools, which examined the GenAI tools used by students and the related tasks; (3) Impact and Effectiveness, which captured usage frequency and perceived helpfulness; (4) Ethical Considerations & Academic Integrity, which addressed concerns such as misinformation and policy clarity; and (5) Open-Ended Questions, which invited detailed comments about the impact of GenAI and its integration into the curriculum. The survey included multiple-choice questions, Likert-scale ratings, and free-response questions. All responses were collected anonymously, as an email login was required to limit one response per student, though identities were not linked to the analysis.

Participants: Following ethics board approval of protocol code STUDY00025344 at the University of Minnesota – Twin Cities, the survey was distributed to students enrolled in the Robotics Master's program at the Minnesota Robotics Institute, University of Minnesota, with a total of 19 students providing responses, reflecting approximately 15% of the current active cohort. The respondents included individuals at various stages of the program, such as first-year students, second-year students, and those in their final semester who are completing a thesis or capstone project. This convenience sample aims to illustrate the current experiences of students using Generative AI tools within this specific graduate program.

Data Analysis: Quantitative responses were aggregated and summarized as percentages or mean ratings. We collected statistics on the frequency of tool usage, such as how often students use Generative AI (GenAI) for academic tasks, and noted specific concerns, like the percentage of students who reported experiencing AI hallucinations. To illustrate these trends, we created visual representations, including a pie chart to indicate usage frequency and bar charts to detail tool and task usage, as well as policy preferences.

Qualitative responses from the open-ended section were analyzed thematically. We employed open coding to identify recurring themes in student comments, which were subsequently categorized into broader classifications, encompassing requests for training, appeals for restrictions or guidelines, and representations of positive or negative experiences. Significant suggestions and concerns were meticulously documented to enhance the interpretation of the quantitative findings. The analysis emphasizes aggregated results, and no identifying information was retained to ensure confidentiality. Figures were generated to visually represent key findings, which are cited in the Results section to support the overall narrative.

Results:

All surveyed students indicated that they have utilized GenAI tools to some extent, with the majority consistently integrating these tools into their academic workflow. As illustrated in Figure 1, 47.3% of respondents employ GenAI tools either "Frequently (weekly)" or "Almost Daily," highlighting the extensive adoption of AI assistance within the program. Around 31.6% of respondents employ GenAI monthly ("Sometimes"), while a small percentage use it only 1-2 times per semester or not at all (15.8% "Occasionally" and 5.3% "Never"). These findings reflect broader trends observed in higher education; for instance, a recent global survey indicated that 24% of students employ AI tools daily, and over half utilize them at least weekly [7]. Our cohort, being part of a technology-oriented graduate program, appears even more inclined toward frequent use of GenAI.

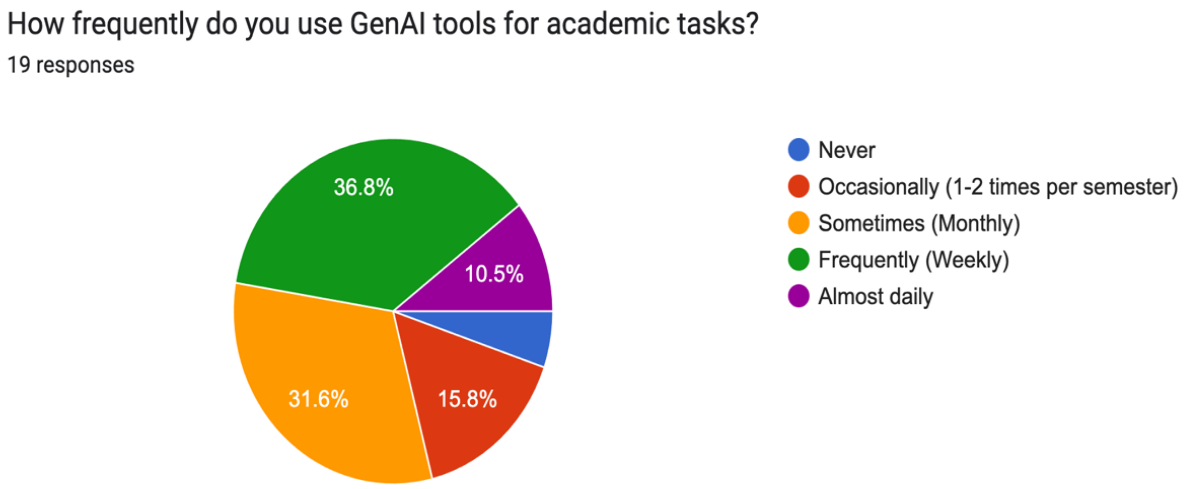

Figure 1: Distribution of self-reported frequency of GenAI tool usage among Robotics MS students (N=19). About 47.3% use GenAI tools "Frequently" (weekly) or "Almost Daily," while a minority (about 5.3%) use them rarely or never.

As shown in Figure 2, ChatGPT is the leading GenAI platform among students, with nearly 90% utilizing it for academic tasks. Google's Bard is accessed by approximately 50% of students, serving as an alternative to ChatGPT. Other tools experience modest usage; about 5.3% of students use Mendeley for citation management and discovering scholarly articles. Although not a text-generating AI, Mendeley is classified as a GenAI tool due to its AI-driven recommendations. Some students mentioned domain-specific AI coding or research assistants, though these are less frequently used. Overall, ChatGPT remains the most utilized GenAI tool, followed by Google Bard/Gemini, while Mendeley occupies a minor role.

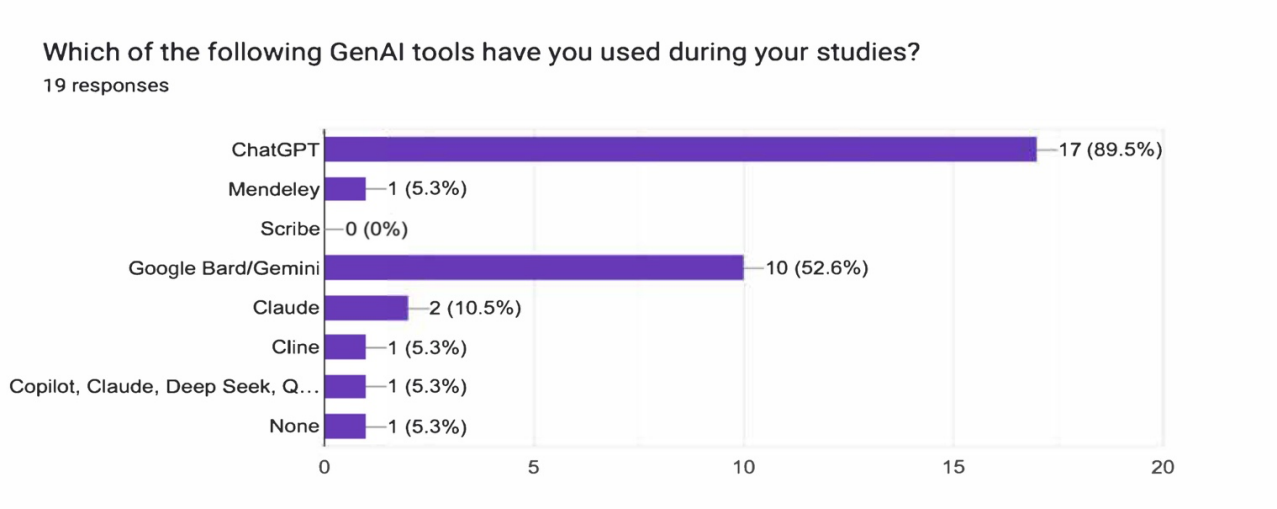

Figure 2: Distribution of the various GenAI tools that are currently being used by students. ChatGPT is among the highest with 89.5% whereas, Copilot etc. was in the minority with 5.3%.

Students use Generative AI tools for various academic tasks, from writing to coding. Figure 3 summarizes the percentage of students who reported using Generative AI for different common tasks in their coursework or research. As shown, writing assignments (such as colloquium reports, essays, or project documentation) are the most common use case, with approximately 90% of students having used Generative AI to help with writing in some form. This includes generating draft text, improving phrasing, or getting help with grammar and clarity. One student noted in the open responses that ChatGPT was "extremely helpful for brainstorming and structuring writing assignments," highlighting the perceived benefits of using such tools for writing tasks.

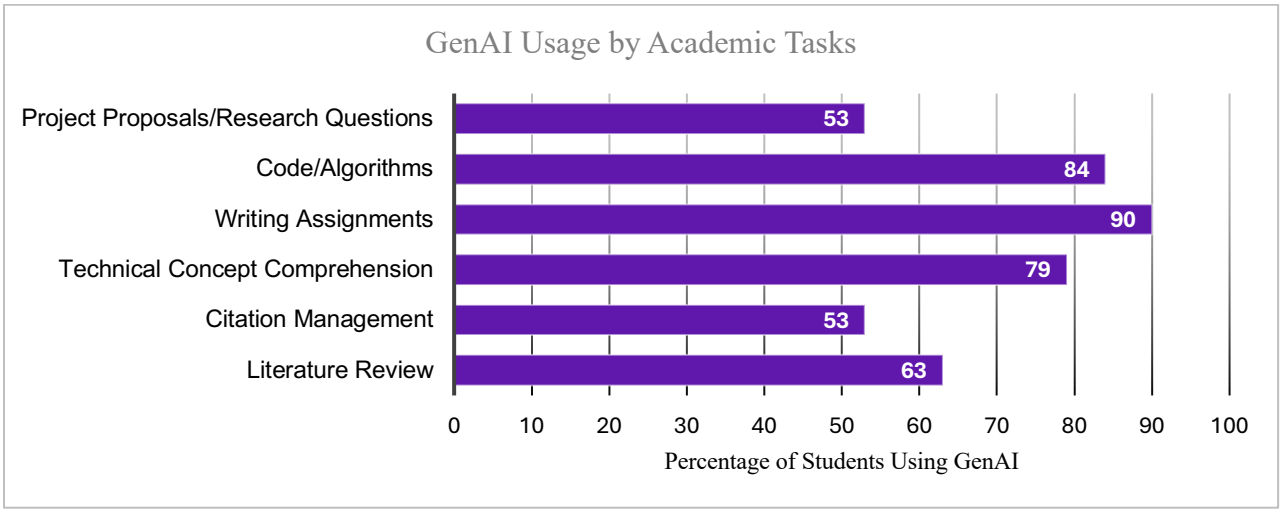

Figure 3: Percentage of respondents using GenAI tools for specific academic tasks. Writing and Coding tasks top the list, whereas tasks like citation management and proposal drafting see comparatively lower GenAI usage.

Apart from writing, coding support is a key application: about 84% of students use GenAI for co de snippets, debugging, or algorithm design. Many treat ChatGPT as a programming aide, seeking

help with syntax, logic errors, or explanations for unfamiliar code. In feedback, some students noted that GenAI "speeds up coding by suggesting solutions" or aids them when they are "stuck on a programming problem." However, they warned that the code often requires verification and testing for correctness. About 79% of people use Generative Artificial Intelligence (GenAI) to grasp technical concepts or complex academic materials. They query the AI to simplify terminology, clarify robotics theories, or provide examples, using GenAI as an educational tutor. For instance, a student mentioned using ChatGPT for "quick explanations of control theory concepts" when course materials were unclear. This illustrates GenAI's role in enhancing learning, highlighting its potential for personalized support, as noted in previous studies [8].

Generative AI (GenAI) assumes a pivotal role in literature reviews, as approximately 63% of students engage it to identify pertinent academic papers or to summarize research topics. Some students utilize prompt-based searches, querying ChatGPT or Bing Chat for key papers relevant to their theses or synthesizing findings from scholarly articles. Nonetheless, students approach literature reviews utilizing GenAI with caution. One student remarked that while AI can "quickly gather info on a topic, I double-check sources since it can miss important papers or include false references." This perspective highlights the limitations of GenAI in the context of academic research. Citation management is a specialized area for Generative AI, with about 53% of respondents using tools like Mendeley or AI features in citation systems. Mendeley users value its AI-driven paper recommendations and efficient bibliography creation [9,10,11]. However, many students still rely on traditional methods or other reference management software. Nearly half use AI to organize and format references, often leveraging Mendeley's automated citation features or consulting ChatGPT for formatting help. Conversely, the other half avoids Generative AI, perhaps viewing the task as simple enough without AI assistance.

Lastly, about 53% of students have used Generative AI (GenAI) to draft project proposals or formulate research questions. This modest percentage may be due to many students not having written proposals yet. Those in their final semester, particularly those with thesis or capstone projects, were more likely to use GenAI for brainstorming research questions and outlining proposals. One thesis student noted, "I asked ChatGPT to suggest potential robotics research questions given a set of interests," finding it helpful for idea generation. Conversely, another student warned, "while it can suggest an outline for a proposal, it won't be aware of the latest lab specifics or realistic scope," indicating that human expertise remains crucial [12].

In summary, Generative Artificial Intelligence (GenAI) tools are widely utilized in robotics programs for various academic activities. The primary applications include writing and coding, along with support in grasping technical concepts. A smaller yet significant portion employs AI for research tasks, such as literature reviews and citation management. These trends indicate that students find GenAI advantageous for productivity in writing and programming, aligning with the strengths of these tools, as ChatGPT excels in generating text and code. The following section will examine how students assess the effectiveness of these tools and the ethical issues surrounding their use.

Ethical Concerns and Academic Integrity:

As generative artificial intelligence (GenAI) tools become more integrated into academic work, students are increasingly aware of the potential drawbacks. The survey administered targeted

questions about misinformation, hallucinations, misuse, and confusion regarding policies, revealing that these issues are common concerns among the student cohort.

Misinformation and Hallucinations: Notably, 74% of respondents indicated that they have encountered incorrect or misleading information, referred to as "hallucinations," from GenAI tools at some point. Students noticed that large language models, such as ChatGPT, can produce responses that sound confidently articulated yet are fundamentally incorrect, particularly in specialized fields. Several respondents recounted instances where the code suggested by the AI failed to execute or contained logical errors, and instances in which a claimed scientific "fact" was, in fact, fabricated [13]. One student commented, "ChatGPT sometimes gives references that look real but don't actually exist," thereby underscoring the hallucination concern within the context of literature searches. Regarding the survey question, "Have you ever had GenAI output misinformation or 'hallucinated' content that caused confusion or problems?", approximately three-quarters of participants responded in the affirmative. The remaining students either have not encountered such experiences or expressed uncertainty, with some selecting "Other" or clarifying that they rarely place full trust in the output without verification. This high incidence underscores why accuracy is a top concern when using GenAI in an academic setting, echoing findings from broader student surveys that accuracy concerns are common [8]. Students' coping strategy, as gleaned from the comments, is to use GenAI as a starting point but then "*verify with reliable sources or personal knowledge*" any critical information.

Academic Misuse and Integrity: Students expressed a nuanced view on using Generative AI in assignments. None supported a total ban, acknowledging its academic value; however, most wanted structured oversight. As shown in Figure 4, 68% preferred allowing GenAI with clear guidelines, indicating a desire for flexibility with accountability. Another 15% suggested limiting its use to tasks like brainstorming or debugging, while 10% favored unrestricted access, trusting students to act responsibly. One student chose "Other," reflecting ambiguity. The lack of support for a total ban highlights recognition of GenAI's practicality. However, their strong call for regulation underscores concerns about misuse, particularly over-reliance or submitting AI-generated work without comprehension. This demonstrates that academic integrity is crucial for students, who want institutions to create clear policies that distinguish ethical use from misconduct.

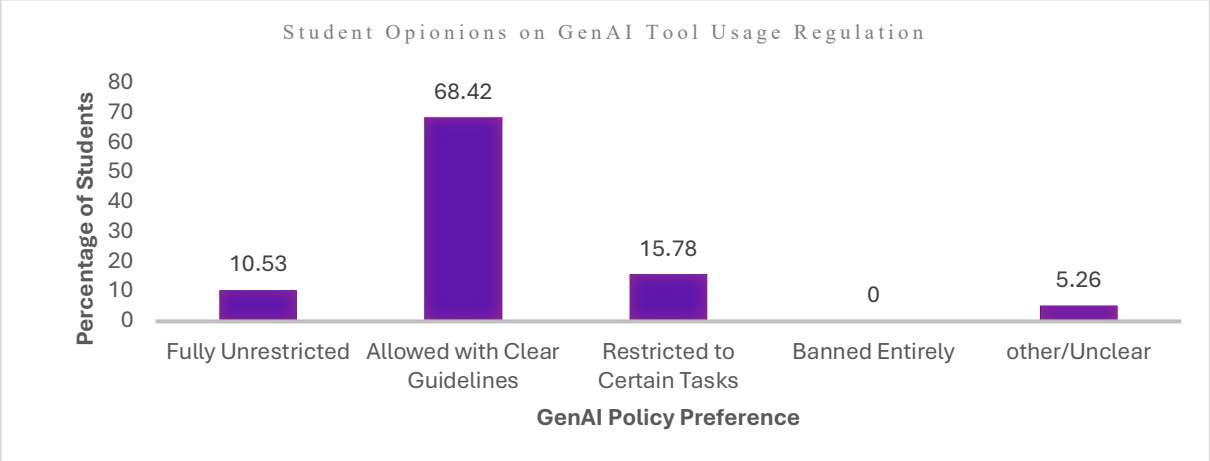

Figure 4: Student opinions on how GenAI tool usage should be regulated in the program. A majority (68%) favor allowing GenAI with clear guidelines, while others support partial restrictions or full

freedom. No students supported a complete ban, indicating strong overall support for thoughtful integration rather than prohibition.

The open-ended responses indicate that many students elaborated on the types of guidelines or restrictions that would be considered appropriate. A prevalent theme was transparency; students expressed that using GenAI for assignments is acceptable only if they can ensure that the work remains their own and that they properly cite or acknowledge AI assistance when necessary. "*It shouldn't be used to do your whole assignment*," one student commented, "*but it's okay to get hints or check your work. Perhaps the syllabus should say what's allowed*." This reflects a concern that, without clear regulations, some individuals may overly rely on GenAI in ways that could be viewed as academic dishonesty, such as submitting AI-generated essays as their original work. Indeed, several respondents admitted to feeling uncertain about the academic integrity policy; one individual remarked, "*I wasn't sure if using ChatGPT to get feedback on my code was considered cheating, so I avoided mentioning it*," highlighting the confusion surrounding the differentiation of acceptable practices.

Policy Confusion: The survey asked, "*Have you ever felt uncertain about whether your use of GenAI tools violated academic integrity or course policies?*" Results showed that policy confusion is widespread, with about 68.4% of respondents saying "Yes," indicating uncertainty, while 31.6% answered "No," indicating clarity. Thus, students experience some uncertainty regarding GenAI and academic integrity. This finding suggests that institutional guidelines are not keeping pace with the rapid emergence of AI tools. Students may be using GenAI without fully understanding permissible boundaries. Some respondents noted a desire for "explicit honor code instructions about AI" and for "faculty to discuss how we can or cannot utilize ChatGPT for assignments." This desire for clarity presents an opportunity for the program to revise its academic integrity policies to include GenAI scenarios.

In addition to policy considerations, students also expressed concern about an over-reliance on generative artificial intelligence (GenAI) and its implications for skill development. Several respondents articulated apprehensions that excessive use of GenAI may impede their learning processes: "*If I use it too much for coding, will I really learn to debug on my own?*" This reflects a heightened awareness of potential misuse, extending beyond academic dishonesty to the detriment of personal skill mastery. Nevertheless, the majority viewed GenAI as a net positive when used judiciously—one student remarked, "*It's like using a calculator – fine for some things, but you need to know how it works.*" Overall, the ethical perspective of this cohort can be encapsulated as enthusiastic about the advantages offered by GenAI while maintaining a cautious approach to its inherent pitfalls. They express a desire for guidance to maximize learning benefits while minimizing academic risks.

Integration into Curriculum Student Suggestions:
In the concluding segment of the survey, students provided open-ended feedback about the integration (or regulation) of GenAI tools within the Minnesota Robotics Master's curriculum. Despite the diversity of individual experiences, several key themes emerged across the responses:

Desire for Formal Training and Workshops: A substantial number of students advocated for the program to offer training sessions or modules on GenAI tools. They argue that both students and faculty would benefit significantly from gaining the skills necessary to use these tools effectively

and ethically. For instance, one student articulated, "*We need a seminar on how to properly use tools like ChatGPT for research – for example, how to prompt effectively and how to fact-check the answers.*" Another student proposed incorporating a GenAI orientation early in the program to ensure that all participants have a foundational understanding of the capabilities and limitations of these tools. This request for training aligns with global student expectations; notably, approximately 73% of students in a worldwide survey expressed the belief that universities should provide training for both students and faculty on the effective use of AI tools [7]. Our respondents similarly contended that AI literacy has become an essential skill and expressed a desire for the curriculum to address this gap. Additionally, they expressed an interest in learning about advanced applications, such as using GenAI in programming assignments or conducting literature reviews efficiently, as well as understanding the scenarios in which its use may not be appropriate. Providing formal instruction could enhance students' productivity in utilizing GenAI (thereby improving their "AI literacy") and reinforce the established norms of acceptable use.

Clear Guidelines and Inclusion of Policies: Students have expressed a desire for greater clarity regarding academic integrity policies related to Generative AI (GenAI). Many have suggested that course syllabi should explicitly outline acceptable uses of GenAI tools for assignments. One student articulated, "*Professors should state: you can use GenAI for brainstorming or debugging, but not for writing the final essay, and you must cite it if used.*" Such guidance would mitigate existing ambiguities. Additionally, some have proposed an addendum to the honor code for AI, which would require students to disclose any AI usage in their submissions, like the requirement for source citations. There is a prevailing consensus that GenAI should not be entirely prohibited or disregarded within policy frameworks; instead, it should be integrated with clearly defined boundaries. Students maintain that such clarity will discourage unethical practices and promote legitimate utilization, thereby alleviating concerns about the responsible use of ChatGPT as a resource.

Integration into Assignments and Teaching: Beyond simply enforcing established policies, students proposed innovative methods for utilizing GenAI as an educational resource within the curriculum. For example, one student suggested that instructors could design an assignment in which the use of a GenAI assistant forms part of the process, allowing students to critique the AI's output. This approach aids student familiarity with the tool and its limitations. Other students expressed that certain repetitive aspects of assignments (such as initial code setup or formatting references) could support the adoption of GenAI, thereby enabling students to focus on the fundamental learning objectives. A student working on a capstone project communicated a desire for "the capstone guidelines explicitly to allow the use of AI for handling minor tasks, so we can dedicate more time to design and analysis." This statement reflects the students' recognition of GenAI's potential to enhance efficiency for lower-level tasks, consequently boosting the quality of project work. Furthermore, several responses indicated that faculty should exemplify appropriate GenAI usage: for instance, by demonstrating in class how to utilize ChatGPT for troubleshooting programming challenges or generating examples, followed by a critical assessment. This pedagogical integration would clarify the tools and illustrate to students how professionals might employ AI in problem-solving.

Addressing Reliance and Skill Development: Some students expressed caution about integrating GenAI into education. They believe fundamental skills must be practiced independently of AI to

ensure competency. For example, one student stated, "GenAI is a great helper, but I worry about becoming too reliant. Perhaps assignments could have an AI-allowed part and a no-AI part, to keep us sharp." This reflects the need for a balanced approach: using GenAI where it enhances learning while fostering manual problem-solving and original thinking, without relying solely on AI. A suggested strategy includes "AI-optional" and "AI-free" assignments; the former teaches students collaboration with AI, while the latter assesses their independent mastery. These perspectives highlight that using AI doesn't mean surrendering all tasks; instead, it requires careful consideration of its educational suitability.

Concerns Regarding Equity: Students expressed the need for equity in integrating Generative AI (GenAI) into the curriculum. Not all students may have equal proficiency with these tools, underscoring the necessity for comprehensive training. Significant differences in AI usage could lead to inequities in assignment outcomes. One respondent asked, “Will using ChatGPT give me an unfair advantage on take-home exams compared to someone who doesn’t?” Another inquired, “If I choose not to use it, am I at a disadvantage?” These questions indicate that the program should aim to create a level playing field, either by allowing and instructing all students on AI use or regulating its application in graded assessments. The consensus was that whichever approach is adopted must be transparent and consistently applied to prevent confusion and ensure fairness in evaluations.

In summary, the feedback highlights a demographic of students eager for the constructive integration of Generative AI (GenAI) into their education. They clearly reject vague and impromptu use of ChatGPT in dorms, advocating instead for open discussions, formal guidance, and academic initiatives that leverage these powerful tools. Many view GenAI as an essential part of “academic infrastructure”, akin to libraries or software, urging the program to enhance integration efforts. The focus on training and guidelines indicates that students feel somewhat isolated in this new landscape and desire institutional support. The next section will discuss how these insights can lead to actionable changes in the Robotics curriculum and policies.

Integration into Curriculum Staff Suggestions:
Generative AI tools, specifically ChatGPT, were used to create a comprehensive set of interview questions for potential candidates. These questions were systematically organized into three categories: technical, behavioral, and scenario-based. This approach improved the scope and complexity of interview topics and enabled a more efficient evaluation process. Staff members reported a greater alignment between interview outcomes and program objectives, as well as a reduction in the time spent on question preparation.

Discussion:
The survey results highlight a crucial moment in graduate education, where students' use of artificial intelligence exceeds its formal inclusion in curricula and policy. Robotics students are adopting Generative AI for its clear benefits: improved coding and writing efficiency, accessible explanations of complex topics, and general academic support. These findings align with broader trends; for example, Chan & Hu (2023) noted students appreciate Generative AI for facilitating brainstorming and offering customized assistance [8]. Our data shows that nearly all students in this field regularly use these tools. Ignoring or banning Generative AI in education is impractical and unwelcome among students, as no respondents support a ban. Instead, there is strong demand

from students for instructors and program directors to acknowledge Generative AI and actively guide its use.

One notable insight involves the maturity of student perspectives on ethical issues. Rather than a haphazard “use AI for everything” approach, students show caution and reflection. About 80–90% prefer guidelines or limited use, demonstrating their understanding of academic integrity. They do not want Generative AI as a shortcut that undermines their degree's value; instead, they aim to use it as a learning tool. This aligns with responsible AI utilization. In robotics, which combines programming, mathematics, and engineering, students likely realize that true mastery requires more than mindless AI reliance. Their calls for partial restrictions and a hybrid approach with AI and non-AI methods advocate for blended learning. Educators should find this perspective encouraging: students seek not to relinquish learning to machines but to integrate technology to enhance their education.

Misinformation and hallucinations require a decisive response in curricula: the need for information literacy and critical evaluation skills has grown with GenAI. Respondents' experiences with AI errors highlight the importance of teaching students to cross-verify AI information, discouraging them from accepting AI outputs as authoritative. This can be achieved by integrating exercises where students analyze AI responses, identify inaccuracies, and correct them, transforming AI's known weaknesses into valuable learning opportunities. Students are already aware of this issue, so the next step is to formalize that awareness into skill development. Instructors can assign tasks where students compare AI-generated code with their own, discussing discrepancies and errors. This reflective practice directly addresses hallucinations and enhances students' confidence in critically engaging with AI.

A key discussion topic is the evolution of academic integrity policies. With three-quarters of students unclear about Generative AI usage, institutions must update their honor codes. The Robotics program and university community could benefit from a committee to define acceptable AI collaboration. The policy should address: Is using AI for initial drafts acceptable? Should students acknowledge AI support? What detection and penalty measures exist for misuse? Research shows students favor regulations for clarity, not loopholes. Therefore, reasonable guidelines are likely to gain support, such as allowing AI use with citation while banning direct copy-pasting. Integrating these policies into new student orientations can reduce confusion. The Robotics program might introduce a module called “Ethics of AI in Academia” at the semester's start to discuss acceptable practices thoroughly.

Integrating GenAI into the curriculum can enhance the learning experience when approached thoughtfully. Students suggest that instructors incorporate GenAI into demonstrations or assignments, guided by clear pedagogical objectives. For example, in a robotics programming course, an instructor could use ChatGPT to generate a function and test it in real-time on a robot simulator, showcasing both successes and failures. This method captivates student interest while teaching valuable lessons on the iterative process of using AI-generated code. In writing-intensive components, such as project reports, instructors may allow AI use for grammar and style enhancement but restrict it for generating technical content. This ensures students concentrate on conceptual clarity and improving their communication skills. Each instance of AI integration

should prompt a discussion on the quality and accuracy of its contributions, transforming every situation into an educational opportunity.

From an instructor's perspective, ensuring fairness and achieving learning outcomes are crucial. Data shows that some students fear unequal advantages among their peers. If AI use is permitted, it should be accessible to everyone. However, if AI could compromise assessment integrity (e.g., in take-home exams where ChatGPT could easily provide answers), instructors may need to reconsider those assessments. This could lead to increased oral examinations, project-based evaluations, or in-person assessments where AI assistance isn't feasible. Such changes reflect a broader pedagogical shift that universities are contemplating due to advancements in AI. The Robotics program may also need to review traditional assessment methods. Student feedback highlights the need for clarity on when AI can be employed, indicating that instructors should clearly specify when AI use is not expected and tailor assessments accordingly.

Generative AI (GenAI) adoption offers new educational opportunities. Academic courses could include assignments focused on AI tool development or analysis, aligning with robotics and computer science disciplines. For example, a robotics student might create a basic generative model or evaluate ChatGPT's performance in a robotics Q&A scenario. This approach integrates AI into the curriculum and prepares students for an AI-augmented workforce. An external survey by the Digital Education Council found that 80% of students felt their university's AI integration was lacking [7]. Similarly, our Robotics students suggest that the curriculum hasn't fully adapted. Considering their feedback could position the program as a leader in effectively incorporating Generative AI.

In conclusion, our research emphasizes the importance of equilibrium and preemptive adaptation. Students regard Generative Artificial Intelligence (GenAI) as both a robust educational instrument and a considerable risk if mismanaged. They seek assistance from educators to navigate this complexity. The findings indicate that educational institutions ought to acknowledge GenAI as an emerging reality and consequently modify their structures. This entails updating policies to establish guidelines and revising pedagogical techniques to incorporate AI, thereby improving educational outcomes. The Robotics Graduate Program can utilize these insights to formulate a strategy: instructing on the responsible application of GenAI to enhance the curriculum while strengthening students' comprehension of fundamental principles and ethics. This strategy will prepare students to engage with AI responsibly in their academic pursuits and equip them for the workforce with a strong capability to employ AI tools, as many anticipate.

Conclusion:

Our analysis of the "*Generative AI in the Robotics Graduate Program*" survey reveals that Generative AI tools have become essential for graduate students. Tools like ChatGPT are widely used for writing and coding, resulting in reported gains in efficiency and learning support. Students are also increasingly aware of risks such as misinformation and ethical ambiguities. Their dominant sentiment leans toward cautious acceptance rather than outright rejection of Generative AI. They urge the program to provide guidance through training, clear policies, and curriculum design to ensure Generative AI enhances learning rather than detracts from it.

The findings on the Robotics MS program are timely and suggest several actions: (1) develop guidelines for Generative Artificial Intelligence (GenAI) use in program handbooks and course syllabi, created with input from faculty and students; (2) offer AI literacy workshops or courses focused on proper and improper GenAI use, empowering students for equitable proficiency; (3) pilot GenAI in assignments and classroom activities, allowing its use for specific project phases to assess its impact on learning; and (4) update assessment methods to accurately evaluate student comprehension, regardless of GenAI use during the learning process.

Ultimately, the goal is to cultivate graduates who can effectively use artificial intelligence tools while having a deep understanding of their fields. The robotics industry, like many others, is increasingly adopting AI; therefore, our students must graduate with confidence in using these tools ethically. The survey indicates that students recognize this need and want the curriculum to align with current realities. By addressing these insights, the robotics program can enhance student satisfaction and outcomes, reduce confusion and misconduct, and demonstrate a thoughtful approach to integrating generative AI into higher education.

This case study suggests that higher education must evolve in response to artificial intelligence. Transparency, guidance, and adaptability are essential for effective leadership. As one student noted: "*GenAI is here to stay, teaching us how to use it is the best way forward*." Our analysis supports this sentiment. By incorporating student feedback into curricular changes, institutions can ensure that GenAI becomes a beneficial ally in learning rather than a feared adversary. The dialogue between students and educators reflects a crucial step in shaping the future of AI-enhanced learning.

Recommendations:
To facilitate the responsible and effective use of Generative Artificial Intelligence (GenAI) tools in robotics education, the following recommendations are proposed: (1) Implement structured training sessions focusing on the ethical and strategic applications of artificial intelligence, (2) Establish transparent, program-wide policies to regulate the use of AI tools, including designing and administering longitudinal surveys and simulations to evaluate educational outcomes, (3) Encourage critical engagement with AI-generated content to enhance analytical skills, and (4) Invest in detection mechanisms and authorship verification technologies to maintain academic integrity. By adopting these measures, academic programs can ensure that GenAI serves as a constructive complement to traditional teaching methodologies.

Future work:
Researchers proposed administering a survey among a broader group of graduate students enrolled, aimed at understanding the perspectives of students regarding the integration of Generative AI tools in their academic journey.

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