AI in College Admissions: Transformative Tools, Ethical Considerations, and Implications for Applicants and Institutions

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

In recent years, the integration of generative Artificial Intelligence (AI) technologies has significantly influenced and transformed various aspects of society, including the realm of higher education. One notable area where this impact is particularly profound is the college admissions process. Generative AI tools, such as ChatGPT and educational chatbots, have emerged and are capable of assisting applicants in crafting admissions essays, automating essay scoring, and guiding students through the application journey. Access to this technology could fundamentally change the essay creation process and it raises questions regarding its implications for college applicants.

This paper aims to explore the influence and transformation brought about by generative AI on the college admissions process during the 2023 academic year. By examining current software tools available for applicants, including ChatGPT, educational chatbots, and AI services dedicated to providing feedback on essays, we can analyze their impact on essay quality, authenticity, and the overall admissions experience for applicants. While this paper will mainly focus on implications for college applicants, this paper will also analyze the perspectives of key stakeholders, including university educators and admissions decision-makers, to understand the opportunities and challenges associated with the integration of AI in this part of the admissions process.

Through a synthesis of empirical studies and analysis, this paper sheds light on the implications of generative AI in college admissions on the college applicants. It explores how AI-driven innovations may enhance efficiency, accessibility, and fairness in the admissions process while also raising concerns related to equity, privacy, and the development of critical thinking skills. By providing a nuanced examination of the topic, this paper seeks to contribute to

a deeper understanding of the evolving landscape of college admissions in the era of AI-driven technologies.

With this context in mind, we proceed to delve into the specific ways in which generative AI influenced and transformed the college admissions essay process during the 2023 academic year, along with the implications of these changes for applicants and educational institutions.

Evolution of College Admissions Process

The college admissions process has undergone significant evolution over the years, driven by societal changes, technological advancements, and shifts in educational philosophies. Understanding this evolution provides good context for analyzing the impact of generative AI on the college admissions process.

A. Traditional Methods of College Admissions

Historically, the college application process has been characterized by several traditional features, each playing a significant role in admissions decisions. Among these features are standardized tests, academic transcripts, recommendation letters, and personal statements.

Standardized tests, such as the SAT and ACT, have long been a cornerstone of the college admissions process. These tests provide a standardized measure of a student's academic abilities and are used by admissions committees to compare applicants from different backgrounds on a level playing field. While some believe that these tests are biased and limited in their ability to predict college success, standardized tests have traditionally held a lot of weight in admissions decisions. In recent years, however, many schools have transitioned to being "test optional," meaning that they are no longer required to submit a complete application. Academic transcripts offer a comprehensive overview of a student's academic performance throughout high school. Admissions committees look at these transcripts to assess the rigor of a student's coursework, the consistency of their grades, and their trajectory. High grades in challenging courses signal a student's preparedness for college-level work and are often favored by admissions committees. In addition, recommendation letters provide insights into a student's character, personality, and potential for success in college. Typically written by teachers, counselors, or mentors, these letters offer a personalized perspective on a student's strengths, achievements, and contributions to their school community. Strong recommendation letters can enhance an applicant's profile by highlighting qualities that may not be evident from their academic record alone.

One of the most important elements of a college application are the personal statements, or college essays, which offer applicants an opportunity to showcase their unique experiences, interests, and aspirations. These essays allow students to demonstrate their writing skills, critical thinking abilities, and self-awareness to admissions committees. Personal statements provide a holistic view of an applicant beyond their academic achievements, enabling admissions committees to assess their fit with the institution's values and culture. These are intended to be entirely crafted by the applicant, and often the prompts are unique to the college.

B. Introduction of Generative AI in Admissions Processes

In recent years, the landscape of generative AI technologies has expanded significantly, introducing a plethora of powerful tools like natural language processing (NLP) models akin to ChatGPT. These generative AI systems exhibit remarkable capabilities, enabling automation of tasks that were conventionally carried out by applicants, essay editors, and admissions officers. From evaluating essays and assessing language proficiency to providing personalized feedback, these technologies have revolutionized the efficiency and effectiveness of admissions procedures. In addition, students have been able to use this technology to generate novel writing that can be used in a personal essay.

Moreover, some of these models even offer accessible APIs, facilitating integration with existing systems and further extending their utility in educational settings. This has led to the creation of many online software services designed to automate or aid in this process. This seamless integration not only streamlines administrative and repetitive tasks but also opens up avenues for enhanced customization and new solutions within the college application process.

C. Factors Driving the Adoption of AI in College Admissions Essays

From a student's perspective, the utilization of generative AI for crafting and editing essays offers some compelling benefits. Firstly, with AI-powered tools, students can swiftly generate ideas, organize thoughts, and refine their writing with precision, saving valuable time and energy. Additionally, the scalability of AI systems ensures that students can access assistance regardless of the volume of work or time constraints they may face, providing support at their convenience. Beyond mere editing, AI algorithms can also offer insights into effective argumentation, structure, and language usage, empowering students to develop stronger, more compelling essays. These are all possibilities of what AI can potentially do, but it very much depends on how it is used in practice. Nonetheless, the use of generative AI in essay crafting and editing help students quickly generate semi-high quality content and serves as a valuable feedback tool.

D. Key Stakeholders Involved in the Admissions Process

The evolution of the college admissions process encompasses a multitude of stakeholders, each with unique roles and interests. Applicants navigate this journey by submitting applications and utilizing AI-powered tools to bolster their candidacy. Meanwhile, admissions officers take charge of overseeing the process, identify promising candidates, and make decisions on who to admit. Educators, including teachers and counselors, stand as crucial guides for students, offering support and resources to help them present their best selves to colleges and universities. Additionally, policy-makers from government agencies and educational institutions collaborate to develop policies and guidelines ensuring fairness, transparency, and ethical use of AI in admissions practices.

In essence, the evolution of college admissions mirrors broader trends toward automation. The advent of generative AI technologies holds significant promise for enhancing efficiency, accessibility, and equity in admissions practices. However, it also sparks pertinent inquiries into issues of fairness, bias, and the necessity of human judgment in the admissions process.

Literature Review

In the realm of essay writing assistance, the integration of AI-powered tools like ChatGPT has garnered attention. Studies by Bašić et al. (2023) and Herbold et al. (2023) shed light on the impact of these tools on essay quality and authenticity. While Bašić et al. (2023) found no improvement in essay quality with ChatGPT usage, it found that when aided by ChatGPT the essays had higher text inauthenticity. It found that when used as a writing tool, there was no evidence to suggest that the essays were of higher quality. However, Herbold et al. (2023) reported that AI models, particularly ChatGPT-4, outperformed human users in generating higher-quality argumentative essays. It's worth noting that AI generated essays in this article were not edited by humans. The human essays were found to utilize modal and epistemic constructions more effectively than AI generated essays.

Herbold et al. (2023) did compare different AI models and gave evidence to suggest that they are tangibly improving. For example, ChatGPT-4 surpasses ChatGPT-3 in various areas such as logical structure, language complexity, vocabulary richness, and text linking. ChatGPT-4 also exhibited higher linguistic diversity compared to ChatGPT-3.

The integration of ChatGPT into the academic landscape, particularly among university students, has garnered significant attention. Notably, factors such as its user-friendly interface and perceived utility have propelled its adoption into the fabric of the essay writing process (Abdaljaleel et al., 2024). Nonetheless, there are growing concerns regarding the potential ramifications of AI tools on students' creativity and critical thinking abilities (Malik et al., 2023).

Moreover, the increasing use of AI technologies in admissions processes has led to discussions on equity and fairness. While some educators perceive AI tools as potentially democratizing access to essay writing assistance (Singer, 2023), others argue that outsourcing writing tasks to bots may hinder students' development of critical skills (Singer, 2023). Additionally, the evolving admissions landscape, marked by increased application rates and selectivity among colleges (Nietzel, 2023), underscores the need for ongoing scrutiny of AI's role in shaping the admissions process.

In summary, the literature reflects a complex interplay between AI technologies and the college admissions essay component. While AI tools offer potential benefits in terms of efficiency and accessibility, concerns persist regarding their impact on students' skills

development and the equity of admissions processes. As universities navigate these challenges, a nuanced understanding of the implications of AI integration is essential for ensuring fairness and promoting students' holistic development in the admissions process.

Current Software for College Admissions

Generation: ChatGPT & Delilah.AI

As an advanced text generation model, ChatGPT operates through a chat interface, enabling users to input queries or prompts and receive human-like responses generated by the AI. Leveraging a vast knowledge base acquired from training on internet text, ChatGPT boasts broad utility across various topics. However, its strength lies in breadth rather than depth, as it lacks specialization in any particular subject matter. While it offers convenience and accessibility, it may not always provide entirely accurate or up-to-date information due to its general-purpose nature. Despite these limitations, ChatGPT serves as a valuable tool for brainstorming and generating content for college application essays.

Delilah.AI's College Applications Hub caters specifically to the needs of college applicants, offering tools tailored to streamline the application process. With features such as extracurricular activity list generation, essay idea suggestions, and AI-generated essay writing, Delilah.AI aims to assist students in crafting compelling application materials. Notably, the service emphasizes the importance of user input and editing, encouraging students to use the generated content as a starting point for their own revisions. By focusing on college application components beyond essays, Delilah.AI demonstrates the versatility of generative AI in optimizing various aspects of the admissions process.

Editing: The Princeton Review

The Princeton Review, renowned for its educational services, including test preparation and admissions counseling, now incorporates AI into its offerings for college admissions essay review.

The company's AI college admissions essay review service provides users with comprehensive feedback on their essays. For a subscription fee of \$99 per month, students gain access to unlimited essay reviews, featuring evaluations on clarity, coherence, grammar, structure, storytelling, prompt relevance, and concision. Notably, The Princeton Review emphasizes that its AI service focuses solely on providing feedback and does not generate essays on behalf of users. By leveraging AI technology, the service offers a cost-effective alternative to traditional human essay reviewers, with a quicker turnaround time. Moreover, the company reassures users that essays reviewed using AI software will not raise red flags with colleges, highlighting the evolving landscape of admissions evaluation methods.

Evaluation: Fine-Tuned Model for College Essay Evaluation

Researchers at the University of Pennsylvania have developed a fine-tuned AI model for evaluating personal qualities in college admissions essays, aiming to augment traditional human review processes.

This AI model analyzes essays for specific keywords indicative of desired personal qualities, such as determination or ambition. By aligning with human reviewers' assessments of these qualities, the model enhances its accuracy in evaluating essays. Moreover, the study suggests that the AI model's evaluation outcomes remain consistent across demographic

subgroups, indicating potential mitigation of bias. However, it's essential to acknowledge the influence of training data on model performance, as biases inherent in human evaluations may transfer to AI systems.

Notably, the study found that the AI model's predictions of college graduation likelihood were comparable to those of human raters, underscoring its utility in aiding admissions decision-making. This convergence suggests the potential for AI to complement or even replace certain aspects of traditional admissions processes, offering efficiency and objectivity in evaluating applicant qualifications.

Implications for Applicants (Analysis)

Applicants are likely going to benefit from the increases in efficiency and accessibility that generative AI tools offer. Tools like ChatGPT and Delilah.AI offer applicants the ability to swiftly generate ideas, organize thoughts, and refine their writing with precision. This streamlines the essay writing process, saving valuable time and energy for applicants. The scalability of AI systems ensures that students can access assistance regardless of the volume of work or some time constraints they face, providing support on demand when it is most convenient. This accessibility democratizes access to essay writing assistance, especially considering that most tools cost significantly less than a professional college counselor.

The AI algorithms used to review essays can be quite sophisticated, with some having an incredibly large knowledge base. AI can offer insights into more effective argumentation, structure, and language usage methods. This can empower students to write stronger and more compelling essays. While there may be valid concerns about authenticity, studies have shown

that access to AI models like ChatGPT-4 don't result in objectively higher quality essays than essays written without the assistance of these models.

AI-powered essay review services, such as those offered by The Princeton Review, provide comprehensive feedback on essays at a fraction of the cost of traditional human reviewers. This affordability makes high-quality feedback more accessible to a wider range of applicants, regardless of their financial background. These AI services also often offer quicker turnaround times, allowing applicants to receive feedback and iterate more easily and more frequently.

On the evaluation side, there are reports that colleges, especially those with a high volume of applications are using AI to automate many parts of the essay review process already (Claybourn, 2023). While it's likely that these AI models are not completely accurate or even better than a human at reviewing student application essays, it could be used to mitigate bias and ensure consistency in admissions decisions. Students and families have long held the concern about fairness and objectivity in this process, and AI could be an improvement.

While AI tools offer valuable assistance in crafting and editing essays, there are concerns about their potential impact on students' creativity and critical thinking abilities. Some educators worry that outsourcing writing tasks to AI, even if it's a subset of the tasks, may hinder students' development of essential writing skills. It's important that applicants recognize the balance between utilizing AI tools for assistance and actively engaging in the writing process to cultivate their own writing style and personal voice. Using AI as a supplement rather than a substitute can ensure that applicants continue to develop these skills throughout the admissions process.

Implications for Educational Institutions (Analysis)

Generative AI tools offer the potential to streamline and automate various aspects of the admissions process, whether it is essay evaluation or application review. Educational institutions can benefit from increased efficiency in handling a large volume of applications, reducing manual labor and administrative costs associated with traditional admissions procedures. By leveraging AI-powered tools for tasks such as essay evaluation and application screening, institutions can allocate resources more effectively and focus on other critical aspects of admissions decision-making. This could include allocating more time to close decisions, or spending more time and resources on marketing the school to high school students.

The adoption of AI technologies in admissions processes has the potential to enhance accessibility and promote equity in higher education. AI-driven evaluation models may help mitigate bias in admissions decisions by providing consistent assessments across demographic subgroups. Educational institutions can leverage AI to foster a more inclusive admissions environment and ensure fair treatment of all applicants. However, it is important to consider that automated approaches could definitely still include bias, especially if there is bias embedded into the models.

While AI technologies can automate certain aspects of the admissions process, they should complement rather than replace human judgment. Educational institutions must strike a balance between leveraging AI for efficiency and preserving the human element in admissions decision-making. While AI models can offer valuable insights and assistance, human evaluators bring nuanced understanding, empathy, and contextual awareness to the admissions process. Institutions should maintain transparency regarding the use of AI technologies in admissions and uphold the importance of human judgment in holistic candidate evaluations.

Institutions should provide guidance on responsible use of AI, encouraging students to view them as supplements rather than substitutes for authentic self-expression and intellectual engagement. They should establish clear guidelines and protocols for the ethical use of AI in admissions, addressing concerns related to privacy, fairness, and transparency. Monitoring and evaluation are essential to assess the effectiveness and implications of AI-driven admissions practices, allowing institutions to make informed decisions.

References

- Abdaljaleel, M., Barakat, M., Alsanafi, M., Salim, N. A., Abazid, H., Malaeb, D., ... & Sallam,
 M. (2024). A multinational study on the factors influencing university students' attitudes and usage of ChatGPT. *Scientific Reports*, 14(1), 1983.
- Bašić, Ž., Banovac, A., Kružić, I., & Jerković, I. (2023). Better by You, better than Me? ChatGPT-3 as writing assistance in students' essays. *Research Square*
- Barakat, M., Salim, N. A., & Sallam, M. (2024). Perspectives of University Educators Regarding
 ChatGPT: A Validation Study Based on the Technology Acceptance Model. *BMC Medical Education*
- Chan, C. K. Y., & Hu, W. (2023). Students' Voices on Generative AI: Perceptions, Benefits, and Challenges in Higher Education. *arXiv* preprint arXiv:2305.00290.

Claybourn, C. (2023, December 29). Is ai affecting college admissions? | best colleges | U.S. news. U.S. News and World Report. https://www.usnews.com/education/best-colleges/articles/is-ai-affecting-college-admissio ns

- Herbold, S., Hautli-Janisz, A., Heuer, U., Kikteva, Z., & Trautsch, A. (2023). A large-scale comparison of human-written versus ChatGPT-generated essays. *Scientific Reports*, *13*(1), 18617.
- Ihlenfeldt, S. D., & Rios, J. A. (2023). A meta-analysis on the predictive validity of English language proficiency assessments for college admissions. *Language Testing*, 40(2), 276-299.
- Ilieva, G., Yankova, T., Klisarova-Belcheva, S., Dimitrov, A., Bratkov, M., & Angelov, D. (2023, September 1). Effects of Generative Chatbots in Higher Education. *Information* (2078-2489), 14(9), 492 - 517. Retrieved from https://doi.org/10.3390/info14090492
- Johnson, A. (2023, January 18). ChatGPT In Schools: Here's Where It's Banned—And How It Could Potentially Help Students. Retrieved from https://www.forbes.com/sites/ariannajohnson/2023/01/18/chatgpt-in-schools-heres-where -its-banned-and-how-it-could-potentially-help-students/?sh=6961cfa96e2c
- Malik, A. R., Pratiwi, Y., Andajani, K., Numertayasa, I. W., Suharti, S., & Darwis, A. (2023).
 Exploring Artificial Intelligence in Academic Essay: Higher Education Student's
 Perspective. *International Journal of Educational Research* Open, 5, 100296.
- Michael, M. (2017). Actor Network Theory: Trials, Trails and Translations. SAGE.
- Najarro, I. (2023, August 16). College Admission Post-Affirmative Action: What Educators Need to Know. Education Week, 43(1), 14 - 15. Retrieved from https://www.edweek.org/teaching-learning/college-admission-post-affirmative-action-wh at-educators-need-to-know/2023/07
- Natasha Singer. (2023, September 4). Ban or Embrace? Colleges Wrestle With A.I.-Generated Admissions Essays. The New York Times - International Edition. Retrieved from

https://www.nytimes.com/2023/09/01/business/college-admissions-essay-ai-chatbots.htm

- Nietzel, M. T. (2023, September 12). College applications are up dramatically in 2023. Forbes. Retrieved from https://www.forbes.com/sites/michaeltnietzel/2023/03/30/college-applications-are-up-dra matically-in-2023/?sh=1a164f8e9c4d
- Ramesh, D., Sanampudi, S.K. An automated essay scoring systems: a systematic literature review. *Artif Intell Rev* 55, 2495–2527 (2022). Retrieved from https://doi.org/10.1007/s10462-021-10068-2
- Sawyer, E.(2016). College Essay Essentials: A Step-by-step Guide to Writing a Successful College Admission Essay. Naperville, Illinois: Sourcebooks, Inc.