Bioethics Council: Responsible innovation with ethical AI

The rapid advancement in technology increases the concern for ethical implications of artificial intelligence (AI). As AI continues to permeate various aspects of our lives, questions regarding its impact on human well-being, privacy, and societal values are also gaining momentum. As a research-driven life sciences company, Bayer recognizes the need for thoughtful deliberation on these matters. A recent meeting of Bayer´s Bioethics Council focused on the exploration of complex ethical questions arising from generative AI technology. Generative AI systems are systems that are capable of learning and can be used, for example, to generate texts and images.

Through intense conversations with our Bioethics Council members, we jointly explored the ethical dilemmas surrounding cutting-edge advancements in generative AI technologies and their potential impact on society at large. Join us as we delve into the insightful perspectives shared by two of the meeting participants.

Carolina Aguerre
Member of Bayer´s independent Bioethics Council and Professor at the Universidad Católica del Uruguay, Department of Humanities.

Jagat Adhiya
Head of Digital Transformation and IT for Pharmaceuticals R&D at Bayer.

Bayer: Carolina, as a member of Bayer´s Bioethics Council, why do you think it is particularly relevant to discuss the ethics of AI and, in particular, generative AI?

Carolina: AI ethics has been prominent in the public debate over the past years, but the concerns surrounding the ethical implications of AI have been around for a long time. Machine learning and lately generative AI have spurred this debate as AI becomes more ubiquitous, with functionalities that are accessible to more people. Generative AI has exacerbated the ethical considerations of AI, especially as the technology is increasingly able to predict and influence human behavior, but also has the potential to do so without users being fully aware of it. Discussing ethical issues surrounding generative AI is crucial. These discussions help to develop a framework and a narrative that can increase awareness about the imbalances, lack of transparency and need for systemic preparation for many of the changes that these technologies will bring to humanity.

Bayer: Jagat, as Head of Digital Transformation and IT for Pharmaceuticals R&D, can you give us some examples for where we are going to see significant impact of AI in the coming years?

Jagat: There are transformational opportunities to leverage artificial intelligence and machine learning in every aspect of Bayer's businesses and in all our divisions (Pharmaceuticals, Crop Science and Consumer Health), such as novel molecular design, biomarker discovery, medicinal formulation, clinical trial design and execution, regulatory compliance, and safety signals detection and reporting. Enhancing R&D efficiency to accelerate development of impactful medicines is central to our innovation strategy. Digitalization is one key technology helping us to streamline R&D. We are already using AI, computer modelling, and simulation to accelerate in-house drug discovery. All our small molecule programs make use of machine learning models at many steps. Bayer Pharmaceuticals is also partnering with technology leaders such as Google Cloud and Recursion (one of the world´s largest proprietary biological and chemical data atlas), industrializing drug discovery and development to access new areas in innovation.

Our Radiology business recently launched Calantic Digital Solutions, a new platform delivering access to digital applications, including AI enabled tools, for medical imaging. The offering includes tools aiming to aid in neuro, thoracic, cardiac, prostate and breast imaging, with more applications and areas to be added moving forward.

Bayer: Carolina, what are the main AI ethics challenges, when you think about the benefits and risk that this technology beholds?

Carolina: The ethical risks of AI increase with generative AI. These risks include biases, lack of transparency and accountability in how these systems operate. The sources of data used to train these AI systems may also be imbalanced, leading to potential issues. Additionally, there are power gaps between those who have access, skills, and capital to develop these technologies, which can result in serious equity concerns.

These risks can have far-reaching consequences on existing industries and societies and while many sectors and organizations may benefit from the advancements of AI, it is central to ensure that these will be shared more equally and do not disproportionally affect already disadvantaged or vulnerable groups.

Bayer: Jagat, across industry, we see a growing importance of digital ethics in corporate settings. What do you think are key measures that could help mitigate risk and build trust into Bayer´s usage AI technology?

Jagat: In our industry, collaboration among companies is often necessary to unlock the power of data and AI technology to drive innovation that addresses unmet medical needs. Partnerships and collaborations with technology leaders and "TechBio"s are also part of Bayer's innovation strategy. We need to take care that our digital, data and AI partnerships meet appropriate ethical guidelines and regulatory requirements.

 First, we need to give privacy and confidentiality the utmost priority and strictly follow the laws and regulations. We have implemented specific technical measures to secure the data, applying strict guidelines on how patient data should be used, always in accordance with all applicable data protection laws and regulatory guidelines. It is important to fully integrate all regulatory and bioethical requirements, leveraging the advancements in technology to enable innovation through responsible data use.

Second, we need to ensure the proper supervision of AI systems. With effective supervision by healthcare professionals, AI can support physicians manage their rising workload and to help more patients achieve better health outcomes.

It comes down to keeping patients' interests at the forefront and designing for human agency in our use of AI.

Bayer: Carolina, based on your expertise in AI ethics and on your previous experience in consulting Bayer as a member of the Bioethics Council, what is your most important advice for us?

Carolina: I believe that a company like Bayer should never avoid the responsibility of trying to achieve a comprehensive and systemic understanding of the AI systems that are used. Bayer should look at the full life cycle of such AI systems to detect biases, but also reflect the original purpose of the system and the use cases. Algorithmic audits and assessments are crucial steps in addressing ethical concerns related to AI systems. These audits and assessments should be based on core principles, such as those outlined in the [Assessment List for Trustworthy AI](#) which was developed among other tools and instruments by a group of experts on behalf of the European Commission. By implementing these principles from the very beginning, starting from the conception phase of an AI system, one can identify and address ethical issues that may arise, and which may be much more difficult to eradicate in the future. It is essential to incorporate ethical principles in the design of AI systems from the beginning. Additionally, it is important to be ready to review and reassess the design and applications of these systems regularly, as they are constantly changing and evolving.

Bayer: Jagat, you attended the recent meeting with the Bioethics Council to discuss some use cases of generative AI with the bioethics experts. Can you share a key take away from the discussion with us?

Jagat: A lot of our discussion was around ensuring appropriate use of medical data and considerations associated with the creation and usage of synthetic data in the context of generative AI. The key takeaway for me was the importance of ensuring humans remain in control when designing our AI, machine learning and data collaborations and solutions. I appreciated the Bioethics Council's advice to approach our AI endeavors from an equity lens and the need to ensure ethical values are reflected in the design of AI systems. In other words, create full transparency about what is the value proposition that the data and the models offer to patients. This means ensuring patients understand how they can benefit from them.

Our ambition is to unlock the immense power of data and AI to accelerate the development of innovative and personalized therapies and ensuring their accessibility to as many people as possible. We are committed to actively shaping its responsible use and implementation. I look forward to continuing the collaboration with the Bioethics Council on this focus topic as we strive to navigate the ethical implications and pave the way for a future where AI serves humanity in the most beneficial and conscientious manner.

If you would like to learn more about how we engage with the independent Bioethics Council at Bayer please visit our [webpage](#).