Ethical and Cybersecurity Considerations in AI and Robotics for Assistive Technologies

Dr Sabitha Banu[1] A, Yasir Khan[2], Mariyum Munir[3]

[1]Assistant Professor, PSGR Krishnammal College for Women, India.sabithabanu@psgrkcw.ac.in
[2]Student , Abdul Wali Khan University,Pakistan.imyasir.308@gmail.com
[3]Student, Shaheed Zulfiqar Ali Bhutto Institute of Science and technology Technology, Pakistan. 80ee32f9@gmail.com

Abstract:

The integration of Artificial Intelligence (AI) and robotics in assistive technologies presents unprecedented opportunities to enhance the quality of life for individuals with disabilities. However, this advancement brings forth a complex array of ethical and cybersecurity challenges that demand careful consideration. This abstract explores the multifaceted issues of security, privacy, accessibility, and fairness within the context of AI-driven assistive technologies. Security concerns in these systems are paramount, as vulnerabilities could lead to physical harm or exploitation of users. The interconnected nature of AI-powered assistive devices increases the attack surface, necessitating robust cybersecurity measures to protect against unauthorized access, data breaches, and potential manipulation of the assistive systems. Privacy emerges as a critical ethical consideration, given the intimate nature of data collected by assistive technologies. These devices often gather sensitive personal and health information, raising questions about data ownership, consent, and the potential for surveillance. Striking a balance between personalized assistance and user privacy remains a significant challenge.

`Accessibility is both a goal and an ethical imperative in the development of AI and robotic assistive technologies. While these innovations aim to improve access for individuals with disabilities, there is a risk of creating new barriers or exacerbating existing inequalities. Ensuring that assistive technologies are designed with universal accessibility in mind is crucial for ethical implementation. Fairness in AI algorithms used in assistive technologies is essential to prevent bias and discrimination. The potential for AI systems to perpetuate or amplify societal biases could lead to unequal treatment or reduced efficacy for certain user groups. Developing fair and inclusive AI models that account for diverse user needs and backgrounds is a key ethical challenge. Here are some key recommendations to help secure the privacy of users in this domain:

- Robust Data Protection Measures
- User-Centric Design
- Continuous Monitoring and Evaluation
- Transparency and User Control
- Collaboration and Regulatory Compliance

By implementing these recommendations, the transformative potential of AI is harnessed in assistive technologies while prioritizing the privacy and security of the individuals who rely on these solutions to enhance their quality of life.