

Robots and Ethics in Cyberspace

In recent years, artificial intelligence (AI) and robots have gained a significant place in our society and lives. These two entities (artificial intelligence and robots) are an integrated part of cyberspace through digital interfaces such as virtual assistants, autonomous vehicles, and even chatbots, and their evolution must be followed and developed so that humanity and technology follow the appropriate ethical steps.

Robots are encountered in various fields with specific capabilities and performances, such as industrial or medical robots, drones, androids, or humanoids. The AI meets a fast evolution over the robotics systems, so cybersecurity needs to intervene for the good functioning of the robots and the ethical purposes for which they were developed, replacing, for example, human work or socio-economic structures. For this reason, the last research brought into discussion a new field, robo-ethics, which deals with the ethical, legal, and social implications of robots (and roboticists) and AI, so that researchers will be familiarized with standards and requirements.

When we are discussing robots and artificial intelligence, it should be noted in several directions: the robot's development and applications, the human-robot interaction, or autonomous systems. All these directions need to integrate confidentiality and data security intersected with ethical governance, cultural and social impact, and a continuous evaluation to adapt the usage of robots, AI, and cyberspace to a proper path for humanity. Through ethical governance, we should be able to ensure accuracy, transparency, and responsibilities in AI algorithms and establish proper rules to reduce, and even avoid risks and potential misuses of such advanced technologies. Moreover, humans from locations all over the world should be familiarized with ethical norms with regards to robots and AI usage.

As researchers and developers of robots and algorithms designed for artificial intelligent systems and security in cyberspace, we can bring into discussion through collaborations and publications key factors related to industry and audience in the sense of solving the difficult ethical challenge of robots in cyberspace.

We are interested in several directions for research papers involving:

- (1) **Surveys (Review)** about robots and their applications in various domains, including topics related to security, communication, artificial intelligence, cyber security, standards and robo-ethical issues.
- (2) **Case studies:** Simulated and tested results obtained from various types of robots, including topics and discussions related to security, communication, artificial intelligence, cyber security, and robo-ethical issues.
- (3) **Original Research** including introduction, methods, results and discussions sections.

Key Thematic Areas

- **Cybersecurity and Resilience of Robotic Systems** In accordance with the **Cyber Resilience Act (CRA)**, focusing on *secure-by-design* and *secure-by-default* principles, vulnerability management, security update mechanisms throughout the product lifecycle, and supply chain security for robots and autonomous systems.

- **Trustworthy AI and Risk Management** Aligned with the **AI Act**, including studies on the classification of AI systems by risk levels, particularly in high-risk domains such as autonomous transport, medical robotics, and critical infrastructure.
- **Compliance and Certification Methodologies for AI-based Robotics** Research into conformity assessment procedures, technical documentation, standardization, security audits, and certification mechanisms.
- **Ethical Governance and Legal Compliance for Autonomous Systems** Interdisciplinary approaches integrating robo-ethics, cybersecurity, and regulatory requirements to ensure the responsible and safe deployment of robots and AI systems in society.
- **Privacy, Security, and Accountability in Human-Robot Interaction (HRI)** Studies and analyses concerning data protection, privacy-preserving mechanisms, secure communication protocols, and **Explainable AI (XAI)** to support safe and accountable interaction between humans and robots.

Organizers

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