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Ethical Decision-Making in AI and Robotics Research: A Proposed Model

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Abstract : Researchers in the fields of AI and Robotics frequently encounter ethical dilemmas throughout their research endeavors. Various ethical challenges have been pinpointed in the existing literature, including biases and discriminatory outcomes, diffusion of responsibility, and a deficit in transparency within AI operations. This research aims to pinpoint these ethical quandaries faced by researchers and shed light on the mechanisms behind ethical decision-making in the research process. By synthesizing insights from existing literature and acknowledging prevalent shortcomings, such as overlooking the heterogeneous nature of decision-making, non-accumulative results, and a lack of consensus on numerous factors due to limited empirical research, the objective is to conceptualize and validate a model. This model will incorporate influences from individual perspectives and situational contexts, considering potential moderating factors in the ethical decision-making process. Qualitative analyses were conducted based on direct observation of an AI/Robotics research team focusing on collaborative robotics for several months. Subsequently, semi-structured interviews with 16 team members were conducted. The entire process took place during the first semester of 2023. Observations were analyzed using an analysis grid, and the interviews underwent thematic analysis using Nvivo software. An initial finding involves identifying the ethical challenges that AI/robotics researchers confront, underlining a disparity between practical applications and theoretical considerations regarding ethical dilemmas in the realm of AI. Notably, researchers in AI prioritize the publication and recognition of their work, sparking the genesis of these ethical inquiries. Furthermore, this article illustrated that researchers tend to embrace a consequentialist ethical framework concerning safety (for humans engaging with robots/AI), worker autonomy in relation to robots, and the societal implications of labor (can robots displace jobs?). A second significant contribution entails proposing a model for ethical decision-making within the AI/Robotics research sphere. The model proposed adopts a process-oriented approach, delineating various research stages (topic proposal, hypothesis formulation, experimentation, conclusion, and valorization). Across these stages and the ethical queries, they entail, a comprehensive four-point comprehension of ethical decision-making is presented: recognition of the moral quandary; moral judgment, signifying the decision-maker's aptitude to discern the morally righteous course of action; moral intention, reflecting the ability to prioritize moral values above others; and moral behavior, denoting the application of moral intention to the situation. Variables such as political inclinations ((anti)-capitalism, environmentalism, veganism) seem to wield significant influence. Moreover, age emerges as a noteworthy moderating factor. AI and robotics researchers are continually confronted with ethical dilemmas during their research endeavors, necessitating thoughtful decision-making. The contribution involves introducing a contextually tailored model, derived from meticulous observations and insightful interviews, enabling the identification of factors that shape ethical decision-making at different stages of the research process.

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