Chapter 4
Ethical AI Development and Deployment

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ABSTRACT

Due to the development of AI-based models and technologies, ethical AI concepts are needed. Ethical AI helps in the development and deployment of AI-based technologies and models. In this context, this chapter explains the guidelines for ethical AI and also defines the best industry practices for the inclusion of ethical AI. Further, it explains the importance of the inclusion of ethical AI in the model development lifecycle. Also, the chapter analyzes ethical testing and validation steps in detail. This chapter also examines the importance of ethical decision-making. Along with this, this chapter also studies the impact of ethical AI on society. As this chapter analyzes all the parts of the AI development lifecycle, it will help researchers and industry professionals to understand the importance of ethical AI.
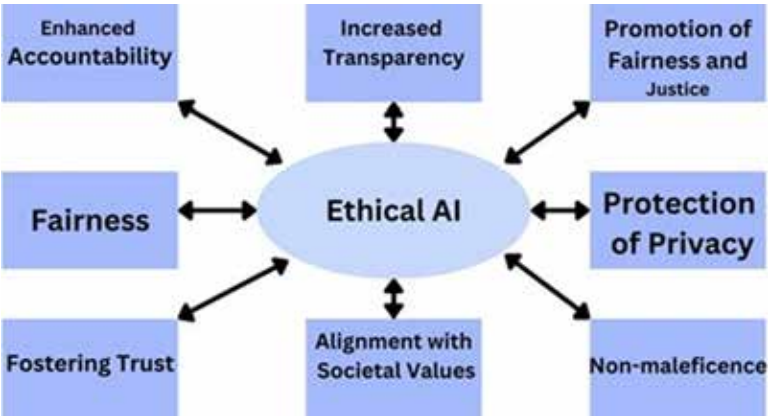
ETHICAL GUIDELINES FOR AI DEVELOPMENT

Introduction to Ethical Guidelines

Ethical guidelines are fundamental in the development of Artificial Intelligence (AI) technologies. These guidelines are essential to ensure that AI systems are designed and utilized in a responsible and ethical manner. Several key aspects underscore the significance of ethical guidelines in AI development (Figure 1).

Firstly, ethical guidelines offer a framework for addressing the social, ethical, and policy issues related to AI technology (Ouchchy, Coin, and Dubljevi´c 2020). By inte- grating principles such as transparency, justice, fairness, non-maleficence, responsibil- ity, and privacy, these guidelines assist in guaranteeing that AI systems are developed and implemented in a manner that aligns with societal values and norms (Minkkinen, Niukkanen, and M¨antym¨aki 2022).

Secondly, ethical guidelines aid in addressing ethical failures that may emerge in AI technologies (Wen and Holweg 2023). Organizations such as companies, research institutes, government bodies, and NGOs have concentrated on establishing high-level ethical principles to steer the use of AI. For example, documents like the "Ethics

Figure 1. Impact of ethical guidelines in AI development

Guidelines for Trustworthy AI" issued by the European Union and Google's principles on AI serve as crucial reference points for ethical AI development (Wen and Holweg 2023).

Furthermore, ethical guidelines are vital for fostering accountability and trans- parency in AI systems (Khan et al. 2023; Xie et al. 2023). Various guidelines, principles, and regulatory frameworks are crafted to ensure that AI technologies

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