Virtue Ethics and software development: debates and proposals

Olaya Fernández Guerrero, Ángel Luis Rubio García
& Julio Rubio García

Ethical issues have a growing interest for software developers, in as much as technological developments are more and more present in our lives, and it has become evident that technologies are morally charged (Verbeek, 2014). From an interdisciplinary approach, gathering researchers from the fields of computer science and moral philosophy, this paper reflects on virtue ethics –first defined by ancient Greek philosopher Aristotle- and explores the possibilities in which this classical moral notion can be addressed in contemporary contexts of software development (Haggendorf, 2020; Gamez et al., 2020). Together with general values such as interaction, correctness and security, widely discussed in the fields of Computer Science and Artificial Intelligence, the research also highlights the importance of intentionality. Given the fact that most software developers usually work in a team, and they often take items of software from different sources available, the implementation of any new software shall be understood as a complex process fragmented among many agents (with their consequent and perhaps hidden intentions), hence it is difficult to identify the bearer of moral responsibility if that software leads to unethical consequences. The paper elaborates on the notion of 'intentional dependency network' to name this chain of complex interactions in the context of software development. The nodes of these intentional dependency networks are constituted by three elements: a human being who interacts with a software artefact with a declared intention. Inconsistencies may arise in a node at local level, since a software artefact can produce certain effects that are incompatible with the intention declared by the human. Thus deepening in the complex ecology of current software development and its networks provides an interesting field to explore the origins and evolution of moral agency. Once thoroughly examined the topics above mentioned, the paper ends with a preliminary proposal on some ethical values and attitudes which should be shared by software developers aiming to achieve moral excellence in their professional performance:

First, awareness and acknowledgement of the moral dimension of software development.

Second, a general attitude of responsibility and preliminary investigation about implicit and declared intentions before use of any piece of already existing software.

Third, intentions should be declared as non-functional requirements for any new software. This will help to assume the moral consequences of choices and decisions made in professional contexts, mainly if those consequences are harmful, discriminatory, or lead to any unexpected misuses of software.

References
Gamez, P., Shank, D.B., Arnold, C. et al. (2020) Artificial virtue: the machine question and perceptions of moral character in artificial moral agents. AI & Soc 35, 795–809. https://doi.org/10.1007/s00146-020-00977-1
Hagendorff, T. (2020) The Ethics of AI Ethics: An Evaluation of Guidelines. Minds & Machines 30, 99–120. https://doi.org/10.1007/s11023-020-09517-8
Verbeek, PP. (2014). Some Misunderstandings About the Moral Significance of Technology. In: Kroes P., Verbeek PP. (eds) The Moral Status of Technical Artefacts. Philosophy of Engineering and Technology, vol 17. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-7914-3_7