Machine (Technology) Ethics: The Theoretical and Philosophical Paradigms

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ABSTRACT

At the foundational level, for computer programmers, the code that programmers build and built into, are based on instructions, and the purpose of the program it later services. But computers do not have their own discretion beyond what humans incorporate into such systems and are essentially limited only to the extent its writer chooses. However, ABET to date, does not provide assurance or require accredited colleges and universities programs in applied science, computing, engineering, and engineering technology to take ethics courses or offer ethics courses nor train graduates in ethics. Yet, graduates, who then become practitioners, and ethical agents, are expected to be ethical agents. Hence, the purpose of this article is on machine ethics, specifically, on the theoretical and philosophical meaning of ethics—different types of ethics and utilitarianism. In addition to exploring the theoretical and philosophical paradigm of ethics, technology will be defined, in relations to machine ethics.

KEYWORDS
Act Utilitarianism, Classical Utilitarianism, Ideal Utilitarianism, Rule Utilitarianism, Technology, Utilitarianism

INTRODUCTION

At the foundational level, for computer programmers, the code that programmers build and built into, are based on instructions and the purpose of the program it later services. Hence, one can argue that computers do not have their own discretion beyond what humans incorporate into such systems, and the end results of intentional actions of any code are essentially limited only to the extent its writer chooses. In this mode, computers can be described as tools, or enablers, of what the users want to do. The entire accountability for ethical conduct rests with its creators. However, this is not to say that humans do not use these enablers in an immoral way. During the 1970s, the leadership of Equity Funding, a U.S. life insurance company, decided to create fake records of life policies, reinsure them to obtain cash from reinsurers by declaring some of these fake insured entities as dead. Equity Funding hid these data from their auditors in what they called File 99 (Raval, 2014). Manipulating the code or data to commit a criminal or immoral act is possible even when computers are no more than tools and the perpetrators come from the line of users and creators.

Furthermore, in an era of advanced computing in which computers are increasingly taking over far more sophisticated roles has arrived and continues to expand. Robotics and nanotechnology are just two examples of developing disciplines that will push the role of computers and computing well past the era of enablers. According to Ray Kurzweil, by the year 2045, “human intelligence will enhance a billion-fold tanks to high-tech brain extension” (Wolfe, 2014). Kurzweil refers to this phenomenon as the singularity, a point at which humans and computers will merge. This sort of one in two will create serious challenges in the allocation of moral accountability between the two. To develop insights into ethical dilemmas of the new world of advanced technologies and their applications,

DOI: 10.4018/IJT.2016070105

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a whole new field, called moral machines or machine ethics, is and has been emerging. Machine ethics is a disciple that attempts to address the ethics of artificial intelligence (AI), and while AI has slowly been transitioning from fiction and movies to the real world over the past several decades, attempts to articulate its moral dimensions are relatively recent. Moral Machines: Teaching Robots Right from Wrong (Wallach & Allen, 2008) and Machine Ethics (Anderson & Anderson, 2011) are two significant publications offering a discussion of morality in the context of smart machines. This leap from computer ethics to machine ethics is necessary due to the elevated status of computer from mere enablers to intelligent collaborators with humans.

According to Anderson and Anderson (2013) and Raval (2014), James Moor considers computing machines that are basically enablers of tasks as normative agents, but not necessarily ethical agents, because they merely perform the tasks as specified and their performance can be objectively assessed. Any development of machines beyond this state requires consideration of the ethical dimension that the embedded intelligence should reflect in its design. For this, Moor suggests three ways to classify issues of moral values in machines: ethical impact agents, implicit ethical agents, and explicit ethical agents (Anderson & Anderson, 2011, pp. 13-20; Anderson & Anderson, 2013). Each category progressively assigns a greater moral role to machines. Hence, the purpose of this article is on machine ethics, specifically, on the theoretical and philosophical meaning of ethics—different types of ethics and utilitarianism. In addition to exploring the theoretical and philosophical paradigm of ethics, technology will be defined, in relations to machine ethics.

With that said, machine ethics, in relations to technoethics (TE), according to Luppicini (2010), which is an interdisciplinary research area concerned with all moral and ethical aspects of technology in society. TE draws on theories and methods from multiple knowledge domains to provide insights on ethical dimensions of technological systems and practices for advancing a technological society (Luppicini, 2010). In other words, TE could be defined as a sum total of ideas that bring into evidence a system of ethical reference that justifies the profound dimension of technology as a central element in the attainment of a finalized perfection of man (Galvan, 2003). This definition presupposes a positive view of technology as anthropologically relevant, which notwithstanding it being one of the first truth known to mankind, has been strongly questioned within many sectors of culture in these last decades.

For this reason, according to Galvan (2003), distinction should first be made between TE and what is generally known as the professional code of ethics of the engineer. This important subject specifically concerns the free and responsible action of these professionals in so far as it forms part of the whole of human activity through the tasks proper to the profession. Though TE has to do primarily with the activities of the engineer, its scope should be considered as ampler, arriving at illuminating all technical activity in so far as this can result in a positive end or the person and techniques itself with respect to the objective value of its products. TE cannot be identified with the ethics of the technological society that is in its own respects, a broad concept including non-technical aspects of human action even though it holds a central position in technology in the central framework of civilization and the definition of behavioral models of man. Thus, machine (technology) ethics, comes into debate, specifically the theoretical and philosophical paradigms of machine (technology) ethics. Hence, this article attempts to contrast the artificial intelligence of machines with the context of theoretical and philosophical of ethics for the accreditation process in ABET (Accreditation Board for Engineering and Technology, Inc.)

TECHNOLOGY

The term technology, could be rhetorical and ambiguous, thus need to be defined and demystified. To demystify technology is to first define technology. In the past, generally speaking, in the workplace, technology simply refers to machines. But technology is a lot more than just machines. It is the means and processes through which, as a society, produce the substance of our existence. It is fundamentally a human process, with people at the center, and it includes five items (Nef, Vanderkop, & Wiseman,
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