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LEGAL AND ETHICAL CHALLENGES OF AUTONOMOUS AI

Abstract

From self-driving cars on the ground to autonomous eVTOL aircraft in the air to robot mining fleets and life support systems in space, autonomous systems are fast moving from being interesting curiosities to the backbone of future industry and economies. Autonomous AI (AAI) holds much promise especially in the harsh space domain. Autonomy is developed through machine learning a process by which the AI is programmed to make choices that would otherwise be made by a human based on algorithms designed to improve with the collection of data. What is significant from a legal and ethical standpoint are two major points. First, that there remains a human construct, if not a human in the loop, of AAI and second, that AAI remains as vulnerable to hacking as any other kind of AI. This paper looks at fully autonomous vehicles deployed on Earth to assess legal and ethical issues that arise. It will consider a number of questions including: What risks are involved as we rely more on machine learning? What kinds of national and international regulations exist to address pilotless vehicles on the street, in the air, in space, or on other celestial bodies? How can a manufacturer mitigate liability? What moral and ethical considerations should or can be built into programming? How can we apply what we have learned thus far on Earth, to the space domain?