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APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE SPACE MINING INDUSTRY

Abstract

The Application of Artificial Intelligence in the Space Mining industry creates such an opportunity to revolutionize the way we extract valuable resources from celestial bodies and to overcome severe technological problems that make this process unachievable. This article is focused on the main aspects to demonstrate the importance of space mining and the possible implementation of AI for various purposes in the space mining industry and its impacts on the industry in question. It is crystal clear that valuable resources will be exhausted within a few decades. In this case, it is required to find different sources to obtain these rare and precious materials, such as Terbium, Neodymium, and Tantalum, which make up the majority of essential machines. Considering the preponderance of the valuable materials had come into the planet from space, it is quite reasonable to search for sources in space. Especially, in the asteroids. According to Goldman Sach analyst Noah Poponak, a single asteroid the size of a football field could contain \$25 billion to \$50 billion worth of Platinum. And bigger Asteroids, like 16 Psyche could cover the world's metal needs, for millions of years. Despite the whole charming aspects of space mining, the main problem which puts scientists' goals further out of reach is the expense. Currently, it costs enormous prices to extract materials from asteroids compared to mining them on the earth. Due to the lack of technology, such complications make replacing mining on earth with space mining unattainable. However, the only solution is the development of the required technology and to achieve the development in question the assistance of AI is inevitable. There are plenty of fields in the space mining industry where AI could be used. For example, it can be utilized for the exploration and discovery of materials by analyzing satellite and telescope data, for robotics and automation processes such as controlling and operating mining robots, or even for mission planning to optimize mining missions. Additionally, one of the major uses of AI in the space mining industry is autonomous navigation, to navigate and maneuver mining equipment in challenging conditions. In conclusion, the application of AI in the space mining industry is a crucial way for being able to sustain the mining process. As mentioned above, by implementing advanced AI techniques such as machine learning and computer vision it is possible to reduce costs and improve the efficiency of space mining operations.