

IOT Application to Rock Engineering

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ABSTRACT

According to Deloitte (2014), the term “Industry 4.0” refers to the next development stage in the organisation of the entire value chain process in the manufacturing industry. In the case of the mining industry, complex tasks are increasingly being handled by smart analytics software packages, while smartphones and other handheld devices have transformed the way that workers interact — not only with each other, but with machines. Advances in robotics and sensor technology now make guided equipment much more affordable and effective. The use of tele-remote, assisted control and fully autonomous equipment is becoming increasingly widespread in the mining industry. These technologies will enable a fundamental shift in the way mining has been done in the past. There will be reduced variability in decision-making and more centralised automated operations that reduce variability in execution (Carter 2017).

Internet of Things (IoT) is one of these technologies that is making a big revolution across the industry. According to an article in IoTAgenda (2019), it is defined as “*a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.*”

With mines around the world going deeper as shallow Mineral Resources are depleted, the challenges facing the industry today are substantial. However, best-practice innovations and technology offer the opportunity for the design and management of high-tech mines that are not only safer, but also more productive and environmentally and socially responsible, while still being economically successful. Similar to other industries, IoT will play a huge role in the advancement of the mining industry of the future.

This paper will review the current IoT technologies and then focus on its application to the mining industry with specific focus to the area of rock engineering or mine geomechanics.

References

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