

# AI and protection of data in the mining industry

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The mining industry in South Africa has embraced digital transformation. Machine Learning, Big Data and Artificial Intelligence (“AI”) are being used for forecasting, diagnosis, classification tasks and increasing safety. With the trend of implementing Industry 4.0 in the mining sector and the increasingly improved monitoring of data, there is a strong urge to transform this data into knowledge which can be used to increase productivity and efficiency. However to avoid falling foul of their legislative mandate in terms of Protection of Personal Information Act 4 of 2013 (“POPIA”), it is of paramount importance that whilst AI and Big Data are developed and more frequently used, organisations ensure that they adhere to their legal obligations in this regard.

The utilisation of AI and Big Data has had a positive impact on many industries and has empowered organisations to modernise and streamline business operations. Where organisations have previously hired experts to manually sift through large quantities of data, Big Data now provides an avenue that can analyse reams of data with software algorithms and provide more precise coding of documentation, whilst also eradicating the tendency for human error.

However, what is probably most significant for AI in the mining industry is the benefit it provides regarding safety of its employees. Safety is a legal requirement in the mining industry imposed on employers by the Occupational Health and Safety Act 85 of 1993 (“OHSA”). Machine Learning and AI can serve the mine administration and mitigate the dangers recognised in the mining industry by providing effective risk assessment, decrease labour exposure and reduce costs.

The question is, how exactly does AI increase safety and efficiency in the mining industry? The fundamental aim of using AI is to collect and share real-time data by using various algorithms to make efficient decisions such as alerting workers about critical situations and as an example assist mining companies to mine coal in hard-to-reach places. It further can assist in creating operational efficiency, reduce manpower required and aid in safety compliance and regulatory requirements. This all accumulates in better cost control when it comes to mineral exploitation, enhances competitiveness and production output.

Companies have developed “Life” wearable gear incorporating sensors that gather brain activities of equipment drivers and monitor the fatigue of miners. The wearable gear developed by Experts Mining Solutions is said to detect fatigue with nearly 95% accuracy. This system measures brainwaves of the wearer and stores their data for medical analysis. It goes as far as detecting lack of signal to the brain and detects dietary or medical conditions. Once this device is deployed, it is geared toward reducing the chance of accidents and collects data which may help the diagnosis of illnesses, aiding timely treatment.

If these wearable technologies are successful, they may address many of the challenges of safety, occupational health and communication at mining sites, facilitating employers in OHSA compliance and transforming the notion of a “hazardous mine” into a modern and safe work environment with increased production and efficiency.

With all this data being collected, it is essential that it is handled and processed in compliance with POPIA. Due to the sensitive nature of personal information, organisations must ensure that the data entrusted to them is safe from exposure or breaches by unauthorised third parties. Therefore as the mining industry collects the personal data of its employees and aims to use AI in its operations it must ensure that 8 main principles of data privacy are complied with –

1. the data must be lawfully collected, with the consent of the data subject when required;
2. the data must only be used for the purpose for which it was intended;
3. further processing of the data must be limited and compatible with the original purpose for which it was collected;
4. the data must not be misleading, it must be complete and accurate;
5. the way it is processed must be transparently communicated with the data subject;
6. measures must be taken to ensure no loss, destruction or damage occurs when processing the data.
7. the data subject should be able to access the data stored on them and correct any information if need be; and
8. it is the responsibility of the party processing personal information to take measures to ensure their activities comply with the principles of POPIA and demonstrate accountability.

It goes without saying, the understanding, intelligibility and development of AI in South Africa is underway, serving countless benefits and aiding the mining industry. With this being said, whilst the industry is modernising, developing its algorithms and aiming to comply with OHSA, it must too ensure adequate POPIA compliance and all the nuances that go with it.



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