Annotated Bibliography

Name

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Date

**IOT**, is a system of connected Mechanical or Computing devices. (Brown Eric 2016) It is the heart of the transformation of many things that are around us that are on the internet in one way or the other. Kevin Ashton who was a British visionary first documented the internet of things (IOT) in 1999. This brought about a system where reality is connected globally by network data sensors. Today, the IOT has different visions based on its user and use. It has become a dynamic network with capabilities based on interoperable communication protocols where physical and virtual interactions are experienced. (SAP 2014)

 According to ( L. Columbus 2016), IOT has become a disruptive technology. The driving force has become digitally transformed to revolutionize the world around us. When connectivity is playing a gigantic role, digitalization is playing defining its role in the mining industry. This is generally to implant many things that are related to electronics and software to make it possible for communication with each other via the internet. This gets us to know the IOT. Coal mining operations have been mobile roof supported by use of IOT. This makes mining easier and fast. (Singh, 2018).

 To begin with Safety, it is what everyone should consider in Mine sites. IOT comes in hand in tackling unsafe situations. For instance, safety interlock switches that monitor single doors and provide insight on usage where developed by the RFID. However, workers ignore some of these safeties and use the interlock switch uselessly. This is a dangerous practice pushed by workers chasing productivity gains rather than following safety processes. (CUMBERLAND, 2019) (Zhang Yinghua, 2012)

Secondly, there have been cases of mines corrupting due to mispredictions on what the mines can support. The IOT technology has helped the mining’s company equip the mines with sensors attached to assets, feeding real-time condition data into the system which gives early warnings before the trouble can even begin.

 The IOT also helps in time-saving by its ability to develop a data mining system that can maintain the mines. There are machines that have been designed out of technology like the Autonomous Drilling system that doesn't require human efforts to operate. Mines operating without time wastage would allow mined materials to be extracted and processed at a very short time. With the implementation of the IOT technology, there has been an increased in the efficiency of detection of problems through the invented IR, ultrasonic means of easily tracking the movement of goods and people. (Structures, 2018)

 In conclusion, many of the mining industries are being modernized hence the need for new skills and training for the workers to operate machinery and use new technology. Learning of new skills and training will not be easy for workers who are still working under the old technology of skills. As such, the mining industry will employ new workers with the needed skills for transition and advancement for the industry hence growing new labor that is technologically advanced. However, workers who are not willing to learn new skills will end up having no jobs. In addition, businesses and industries will benefit greatly from the modernization of mining industries. This is because; mining has been made fast and effective use of technology producing high yields. However, this reduces the lifespan of the mines as a result of over mining. Mine's lifespan is decreased by half the number when technology is used.

 **Bibliography**

**1.**Hendricks, Drew. ["The Trouble with the Internet of Things"](http://data.london.gov.uk/blog/the-trouble-with-the-internet-of-things/). *London Datastore*. Greater London Authority. Retrieved 10 August 2015.

**2.**Brown, Eric (20 September 2016). ["21 Open Source Projects for IoT"](http://www.linux.com/NEWS/21-OPEN-SOURCE-PROJECTS-IOT). *Linux.com*. Retrieved 23 October 2016.

**3.**An SAP affiliate company,” The CEO Perspective: Internet of Things for Mining and Metals”,2014.

**4**.L. Columbus, Roundup of the internet of things forecasts and market estimates, 2016.

**5.**CUMBERLAND, S. (2019, Feb 13). *The human factor of IoT in safety*. Retrieved May 27, 2019, from Plant Engineering: https://www.plantengineering.com/articles/the-human-factor-of-iot-in-safety/

**6.**Singh, A. (2018, March 15). IoT in mining for sensing, monitoring, and prediction of underground mines roof support. 201. Dhanbad, Dhanbad, India: IEEE.

**7.**Structures, A. (2018, Feb 2). *THE ADVANCES OF TECHNOLOGY & METHODS OF FUTURE MINING OPERATIONS*. Retrieved May 27, 2019, from Alaska Structures (AKS): https://alaskastructures.com/mining/advances-in-mining-technology-methods/

**8.**Zhang Yinghua, F. G. (2012). Discussion on Application of IOT Technology in Coal Mine Safety Supervision. *Procedia Engineering*, 233-237.