Incorporating Controls and Automation into Mining Engineering Curriculum

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ABSTRACT

There are several factors that are increasing the need for new graduates to be ready to design and manage more autonomous operations at mines. Autonomous controls and systems range from the startup, control, and shutdown of processing plants to the autonomous operation of vehicles. These operations require the workers, engineers, and management to have additional skills for programming, debugging, tasking, and maintaining the equipment. The future survivability of many mining operations will be influenced by a company's willingness and ability to understand, accept, and utilize this technology for safe and productive operations. This is an educational opportunity and challenge that needs to be addressed throughout the student's experience, from first year to graduate level. This paper discusses the lessons learned from a decade of multidepartment effort at all student levels and many courses that is able to incorporate data science, controls and autonomous design into the already topic rich national curriculum. This approach also exposes other engineering disciplines to the mining industry which is a valuable recruiting tool for talent outside of the mining engineering departments. This methodology is currently being used to include Artificial Intelligence and Machine Learning as a further example.