

# Jordan University of Science and Technology

## Monitoring operational mining equipment using Sprouts Wireless Sensor Network platform,

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**Abstract:** This paper discusses the application use of our WSN platform called Sprouts to monitor the current erosion conditions and retrieval of lost shovel-teeth in the Oil Sands mining operations of Ft. McMurray, Alberta, Canada. The modular architecture design of Sprouts allows us to customize the platform to monitor the thickness of shovel teeth and localize their position upon detachment. Utilizing our Sprouts plug-and-play protocol, we implement three sensor modules to monitor the thickness of the shovel tooth in operation using ultrasound waves, detect the event of a fallen shovel-tooth, and aid the retrieval of fallen shovel teeth using trilateration localization before they cause damage to crushers.