Fused sensors for slope deformation monitoring

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ABSTRACT (USE 'HEADING 1' STYLE)

300 word abstract here…(Use 'Body Text' style)

Slope deformation radar monitors are now widely used in surface mining for monitoring slope deformations and predicting failure events. Their introduction has facilitated better management of risk associated with slope failure during mining and therefore protection of personnel and equipment. However, a well-recognised problem is that radar monitors only measure deformation directed towards the detector (line of sight bias). This bias can lead to misinterpretation of deformation size, rate and failure mechanism, and therefore miscalculation of failure volume, which can significantly impact safety and productivity.

This paper presents recently completed research and field trials into the feasibility of using low cost vision systems to mitigate this issue. It has been demonstrated that by integrating a computer vision system with an existing slope monitor, high precision tracking of features in the field of view can be performed. Combined with assumptions on the deformation characteristics, the true 3D deformation vector can be estimated. The applicability of using this technique for monitoring iron ore mine slopes is discussed.