

# Bump-O-Meter

Proposal for Colorado School of Mines MCS Field Session, Summer 2012

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## Introduction

Modern smartphones contain an array of sensors including accelerometers and gyroscopes that allow them to accurately measure events such as how much a device shakes. These sensors coupled with the on-board GPS allow the events to be positioned spatially and temporally so that you can track something like the “bumpiness” of a road or track through time. Newmont as a major operator of open pit mines maintains many in-pit and external roads and knowing how good or bad a road surface is and when it is deteriorating is important from a safety and maintenance standpoint. The relative bumpiness of a road might also be used to relay information to an operator in real-time alerting them to potential dangers ahead.

## Objectives

1. Develop a mobile application that records the bumpiness of a surface locating it spatially and temporally.
2. Upload cached bumpiness data to a website allowing it to be merged with data from additional devices such that areas of “increased bumpiness” can be identified.
3. As a proxy to the mining environment map the relative bumpiness of bikepaths or roads around Golden.
4. If time and interest permits stream bumpiness data back to the mobile device alerting a user if there are bumps ahead.

## Requirements

1. Knowledge of mobile development tools, either iOS (preferred, Objective-C), or Android (Java) languages along with associated mobile hardware.
2. Strong communication skills, familiarity with Agile practices.

## Work Environment

The work environment and location are completely flexible, but would anticipate a number of face-to-face meetings along with frequent electronic communication as a minimum.