Title: Enhancing Coal Seam Detection through Machine Learning Analysis of Seismic Data

Abstract: Accurate geological modeling is crucial for efficient mine planning. This proposal focuses on applying machine learning algorithms to 3D seismic survey data to enhance the automated detection and characterization of coal seams. A convolutional neural network (CNN) will be trained on existing geological and seismic data to identify subtle patterns indicative of seam location, thickness, and fault lines that are often missed by conventional analysis techniques, thereby reducing exploration costs and improving resource estimation.