Title: AI-Powered Optimization of Autonomous Haulage Systems in Open-Cast Mines

Abstract: Autonomous haulage systems (AHS) improve safety and efficiency in open-cast mining, but their performance is often suboptimal due to static routing. This proposal involves the development of a real-time, AI-driven dispatch and routing optimization engine for AHS fleets. Using reinforcement learning, the system will dynamically assign haul trucks to shovels and optimize routes based on live data from GPS, fuel sensors, and mine-site conditions, with the goal of minimizing cycle times, reducing fuel consumption, and maximizing overall productivity.