Special Issue

Data-Driven Analysis and Simulation of Coal Mining

Message from the Guest Editors

The coal mining industry is undergoing a significant digital transformation at present, driven by the need for improved safety, productivity, and environmental sustainability. With the rapid development of geological exploration and data acquisition technologies, coal mines are generating massive amounts of spatiotemporal data. These data streams, combined with the growing capabilities of artificial intelligence, machine learning, and simulation modeling, offer unprecedented opportunities to understand complex underground processes, predict hazardous events, and optimize mining operations. The integration of data-driven methods into traditional mining engineering practices is becoming a vital strategy for achieving smart and sustainable coal mining. This Special Issue aims to gather advancements on data-driven analysis, intelligent simulations, and computational modeling of coal mining processes. Emphasis will be placed on novel approaches that integrate domain knowledge with experimental and numerical simulation, machine learning, and AI technologies to solve real-world problems in coal mining.

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