AI IN 12 MINUTES FOR MINING

SILVIJA SERES

NEXTPAPER.ME

MOTIVATION - WHY AI?

Optimizing mining operations

Predictive maintenance of equipment

Enhancing mineral exploration accuracy

Automating safety and compliance processes

Data-driven resource management

2/24
INDUSTRY

Mineral Exploration
Mining Operations
Ore Processing
Mine Safety and Compliance
Environmental Impact and Sustainability

SILVIJA SERES

NEXTPAPER.ME

3/24 STRATEGIC TRENDS

AI in mineral exploration
Machine learning for predictive maintenance
Automated drilling and excavation
AI-driven environmental monitoring
Real-time data analytics in operations
Robotics in hazardous tasks
AI for supply chain and logistics optimization
Blockchain for mineral traceability
AI in workforce and safety management
Sustainability analysis using AI

SILVIJA SERES

NEXTPAPER.ME

4/24
WHY CHANGE?

Enhanced operational efficiency
Reduced environmental impact
Improved safety standards
Data-driven decision making
Competitive advantage in the sector

5/24
LEADING THE CHANGE

BHP (Global mining and resources)
Rio Tinto (AI in mining operations)
Vale (Leading producer of iron ore and nickel)
Glencore (Diversified natural resources company)
Anglo American (Global mining corporation)

6/24
DIGITAL TRANSFORMATION

AI algorithms for geological mapping
Predictive models in equipment maintenance
AI-driven ore quality analysis
Drones for aerial surveying and monitoring
AI in real-time operational decision making
Machine learning for process optimization
Automation in mining vehicles and machinery
Data analytics for supply chain efficiency
AI in worker health and safety monitoring
Robotics for repetitive and dangerous tasks

SILVIJA SERES

NEXTPAPER.ME

7/24
AI DISRUPTION

AI in identifying new mining opportunities
Predictive analytics for equipment failures
Automated mineral processing systems
AI for environmental compliance monitoring
Enhanced worker safety with AI technologies
Real-time data analysis for operational adjustments
AI in reducing energy and water consumption
Machine learning in mineral market forecasting
AI-driven asset management
Sustainability initiatives powered by AI

SILVIJA SERES

NEXTPAPER.ME

8/24
GREAT EXAMPLES OF AI

Rio Tinto’s autonomous drilling systems
BHP’s AI-powered exploration strategies
Vale’s AI in preventive maintenance
AI-driven ore sorting technology
Caterpillar’s autonomous mining vehicles
Komatsu’s AI in mining machinery
AI for environmental impact assessments
Blockchain in mineral supply chain transparency
AI in predictive safety management
Machine learning for mineral recovery optimization

SILVIJA SERES

NEXTPAPER.ME

9/24 ECOSYSTEM REQUIREMENTS

Advanced AI and machine learning technology
Collaboration between mining companies and tech firms
Skilled workforce in AI, geology, and mining engineering
Strong emphasis on safety and environmental standards
Investment in digital infrastructure and data analytics

SILVIJA SERES

NEXTPAPER.ME

10/24

AI ⏩ SUSTAINABILITY

AI in reducing mining's environmental footprint

Efficient resource use with AI analytics

Sustainable mining practices through AI insights

AI for energy and water conservation

Data-driven strategies for eco-friendly mining

SILVIJA SERES

NEXTPAPER.ME

11/24
NEW RISKS - ETHICAL, LEGAL, SOCIAL

AI biases in exploration and processing
Data privacy and security concerns
Over-reliance on automated systems
Ethical considerations in AI-driven mining
Cybersecurity threats in connected mining operations

SILVIJA SERES

NEXTPAPER.ME

AI MISUSE EXAMPLES

AI misuse in resource exploitation

Manipulation of AI data for environmental compliance

Unauthorized surveillance in mining areas

AI biases impacting resource allocation

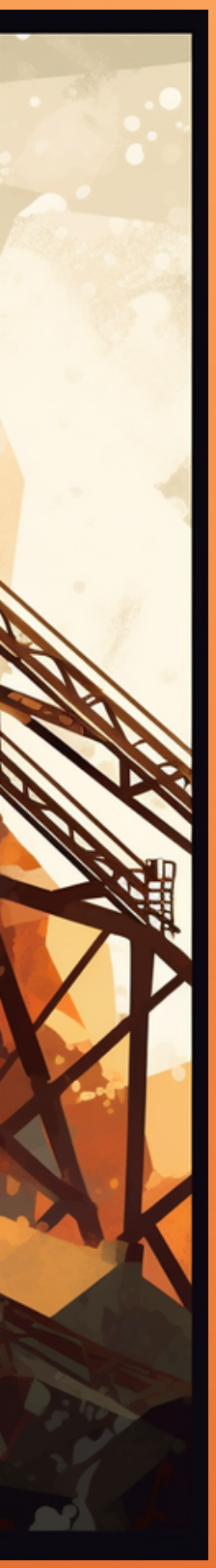
Over-automation leading to workforce displacement

13/24
THREE AI DILEMMAS

Balancing AI efficiency with job impacts in mining?
AI's role in sustainable versus profit-driven mining?
Ensuring fair AI access in global mining operations?

SILVIJA SERES

NEXTPAPER.ME



14/24 ORGANIZATIONAL REQUIREMENTS

Strategic integration of AI in mining processes
Investment in AI technology and skilled personnel
Ethical guidelines for AI use in mining
Collaborative approach to technology and sustainability
Continuous monitoring and adaptation of AI systems

SILVIJA SERES

NEXTPAPER.ME

15/24
STEP BY STEP APPLICATION

Identify AI applications in mining operations
Deploy AI for exploration, processing, and safety
Train staff in AI, mining technology, and environmental management
Implement AI in phases across mining operations
Evaluate and refine AI applications for efficiency and sustainability

16/24
BEST PRACTICES

Prioritize safety and sustainability in AI applications

Maintain transparency in AI-driven operations

Focus on AI for operational efficiency and decision making

Foster innovation in mining technology

Adapt AI strategies to evolving industry needs

SILVIJA SERES

NEXTPAPER.ME

17/24
AI TOOLS & MODELS

Predictive models for equipment maintenance

AI algorithms for mineral exploration

Machine learning in ore processing optimization

Data analytics for environmental impact assessment

Neural networks for safety and compliance monitoring

SILVIJA SERES

NEXTPAPER.ME

18/24 USEFUL DIGITAL TWINS

Digital twins of mining operations for strategy testing

Virtual models of mineral deposits

AI simulations for process optimization

Digital replicas of mining equipment

Virtual reality for safety training and risk assessment

SILVIJA SERES

NEXTPAPER.ME

19/24
COOL NORWEGIAN CASES

Norsk Hydro (Aluminium and renewable energy)
Equinor (Energy and oil exploration)
LKAB (Iron ore mining)
Yara International (Chem&fertilizer production)
Aker Solutions (Engineering&mining services)
Prediktor AS (Industrial IT and automation)
Fieldmade (3D printing solutions for mining)
Earth Science Analytics (AI in petroleum geoscience)
Nordic Mining (Sustainable mineral exploration)

SILVIJA SERES

NEXTPAPER.ME

20/24
GLOBAL LEADERS

Australia (World leader in mining innovation)
China (Major mineral production and technology)
Canada (Advanced in sustainable mining practices)
United States (Mineral resources and technology)
Russia (Large-scale mining and mineral extraction)

SILVIJA SERES

NEXTPAPER.ME

21/24
FUTURE JOBS

AI specialists in mineral exploration
Data analysts for mining operations
AI-driven environmental impact assessors
Mining equipment AI engineers
Sustainable mining consultants

SILVIJA SERES

NEXTPAPER.ME

22/24
THE FUTURE OF AI

Advanced AI in autonomous mining operations
AI for sustainable and responsible extraction
AI-driven innovations in ore processing
AI in enhancing global mineral supply chain
Integration of AI in all aspects of mining and minerals

SILVIJA SERES

NEXTPAPER.ME

23/24 RECOMMENDED READING

"Mining in the 21st Century: Quo Vadis?" by John A. Meech

"Sustainable Mining Practices: A Global Perspective" by Vasudevan Rajaram, Subijoy Dutta

"Artificial Intelligence: A Guide to Intelligent Systems" by Michael Negnevitsky

"Introduction to Data Mining" by Pang-Ning Tan, Michael Steinbach, Vipin Kumar

"The Deep Learning Revolution" by Terrence J. Sejnowski

SILVIJA SERES

NEXTPAPER.ME

24/24 GOOD TED TALKS

"The next manufacturing revolution is here" by Olivier Scalabre

"The thrilling potential of SixthSense technology" by Pranav Mistry

"How we can make energy more affordable for low-income families" by DeAndrea Salvador

"The case for engineering our food" by Pamela Ronald

"Let's prepare for our new climate" by Vicki Arroyo

SILVIJA SERES

NEXTPAPER.ME

WHAT WOULD YOU ADD?

LET ME KNOW!

SILVIJA SERES

NEXTPAPER.ME