AI-Driven Mineral Targeting

Unlocking concealed copper-gold systems using Sentinel-2 satellite data and gas anomalies for junior explorers in structurally complex terrains.

Next-Generation Targeting

Combines open-access Sentinel-2 VNIR-SWIR satellite data with subsurface gas anomaly mapping for faster, more accurate discovery of concealed Cu-Au systems.

Cost-Effective Solution

Enables discovery at a fraction of traditional exploration costs by integrating multi-source geodata including spectral signals and gas indicators like CO2, CH4, and He.

Data-Driven Confidence

Increases confidence in early targeting decisions, minimises blind drilling, and supports focused exploration campaigns with probability-based discovery methods.

This white paper presents the science behind the method, case studies from African regions, and pilot programmes for junior miners seeking early-mover advantage in data-assisted mineral exploration.

The neuro.mine Method

At the heart of neuro.mine lies a revolutionary approach: predicting copper-gold potential before touching the ground. Traditional exploration methods fail in complex terrains due to overburden, vegetation cover, and structural complexity that masks subsurface potential.

01

Spectral Targeting

Using Sentinel-2 VNIR-SWIR multispectral imagery to calculate Ferrous, Iron Oxide, Clay, and Vegetation indices, generating mineralogical maps highlighting hydrothermal alteration zones.

02

Gas Anomaly Integration

Detecting subtle atmospheric gases (He, CH_4, CO_2) that leak from buried mineralisation systems, acting as secondary indicators of subsurface potential.

03

Structural Context

Incorporating fault lines, fold axes, and shear zones with regional geology to define prioritised Zones of Interest with confidence scoring.

Target Deposit Types

- Shear-Zone Hosted Cu-Au Deposits
- IOCG (Iron Oxide Copper Gold) Systems
- Stratiform Cu Deposits
- Epithermal & VMS Systems (in development)

Key Outputs

- Prioritised target zones with confidence scores
- Interactive geological visualisation
- Structural and geological context
- Direct integration with field planning

Proven Results & Pilot Opportunities

Zambia Success

Identified clay-rich alteration zones and iron oxide anomalies aligning with fold-related structures, pinpointing previously overlooked Cu-Au targets.

Zimbabwe IOCG Discovery

Revealed overlapping iron oxide signals, helium anomalies, and fault-controlled settings in underexplored regions with high potential.

Tanzania Rift Systems

Highlighted alteration halos in sediments, refined with CH4 anomalies and stratigraphic context for rift-related sedimentary copper.

1

Regional Targeting Report

Comprehensive spectral, gas, and structural overlays with expert geological interpretation and confidence assessment for your area of interest.

2

Data Integration Support

Optional validation and integration assistance to seamlessly incorporate results into existing exploration workflows and field campaigns.

3

Low-Risk Pilot Programme

Global coverage with Sentinel-2 data, low/no-cost pilot options available for junior explorers and early-stage companies worldwide.

Ready to Transform Your Exploration? Remote sensing and AI-driven targeting are shifting from novelty to necessity. Junior explorers can no longer afford inefficient campaigns. Contact neuro.mine to request a sample region report or apply for a pilot project - let's discover what your region is hiding.

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