BLUE MARBLE GEOGRAPHICS

AI-Driven Object Detection for Modern Geospatial Analysis

Geospatial World Forum 2026

Apr. 2026

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Global Mapper’s AI-driven workflows

Empower geospatial professionals to maximize operational efficiency and data precision through automated, scalable feature extraction.

Rapid, Precise Feature Extraction

Land Cover Classification: Automatically assign every pixel a land use category, such as water, bare-earth, vegetation, or impervious surfaces.

Object Detection: Identify specific features from pixel clusters to generate actionable vector data, such as polygonal roof prints or bounding boxes for vehicle identification.

Confidence Reporting: Maintain data integrity with match attributes that report confidence levels for each detected feature.

User-Guided Optimization

Customization: Save time while maintaining accuracy by fine-tuning provided models or creating new ones tailored to specific biomes or structures.

Hyper-parameter Control: Adjust technical parameters like **Learning Rate** to balance speed and optimization, or **Batch Size** to fully leverage your hardware's processing power.

Resource Management: Use **Early Stopping** to save time and computational resources when a model reaches peak performance.

Seamless Automation & Scalability

Scripting without Code: Use the **Script Builder** to instantly convert interface actions into **Global Mapper Scripts**, removing the need for custom development.

Batch Processing: Fully automate workflows to loop over large directories of data, allowing for "Load > Process > Export > Repeat" cycles.

Organizational Deployment: Share optimized models and scripts across your entire organization for consistent, automated deployment.

Section • 01

Deep Learning Imagery Analysis

- Models are trained for a specific task
    - Land Cover Classification > all pixels assigned land use category > classified raster palette image
    - Object Detection > specific objects identified from clusters of pixels > actionable vector area features
- Fine-tune the provided models or create your own with your own data
- Share models and script operations for automated deployment across your organization

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Land Cover Classification *(Semantic Segmentation)*

- Models trained on 3-band and 4-band NAIP Imagery
- New Desert and Chaparral models included; users can fine-tune for other biome specivity
- Output raster can be used in suitability siting or easily converted to vector areas for quantification of results

Object Detection

Buildings

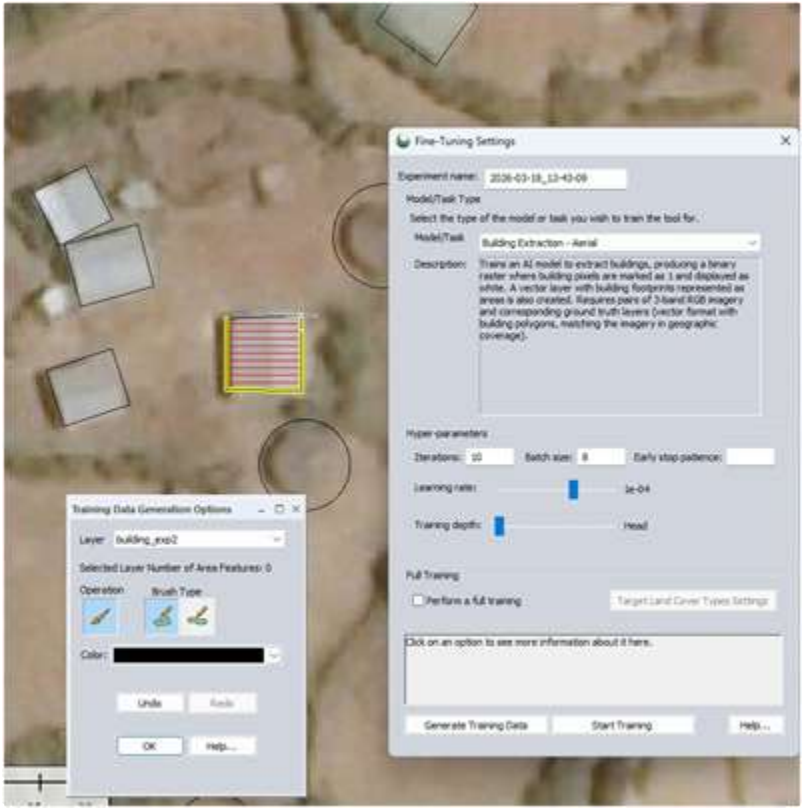
- Polygonal roofprints for measuring structure extent
- Match attribute reports confidence (Confident, Likely, Potential)
- Fine-tune or create model for particular structures

Vehicles

- Bounding box for location mapping / count of features
- Match attribute reports confidence
- Fine-tune or create model for particular vehicle types

User-guided Fine Tuning

Parameter	Business Impact
Training Depth & Iterations	Save time while maintaining accuracy for different size sample data
Learning Rate	Speed vs Optimization
Batch Size	Take advantage of processing power
Early Stopping	Optional time & resource Savings



Section • 02

Automation & Scalability

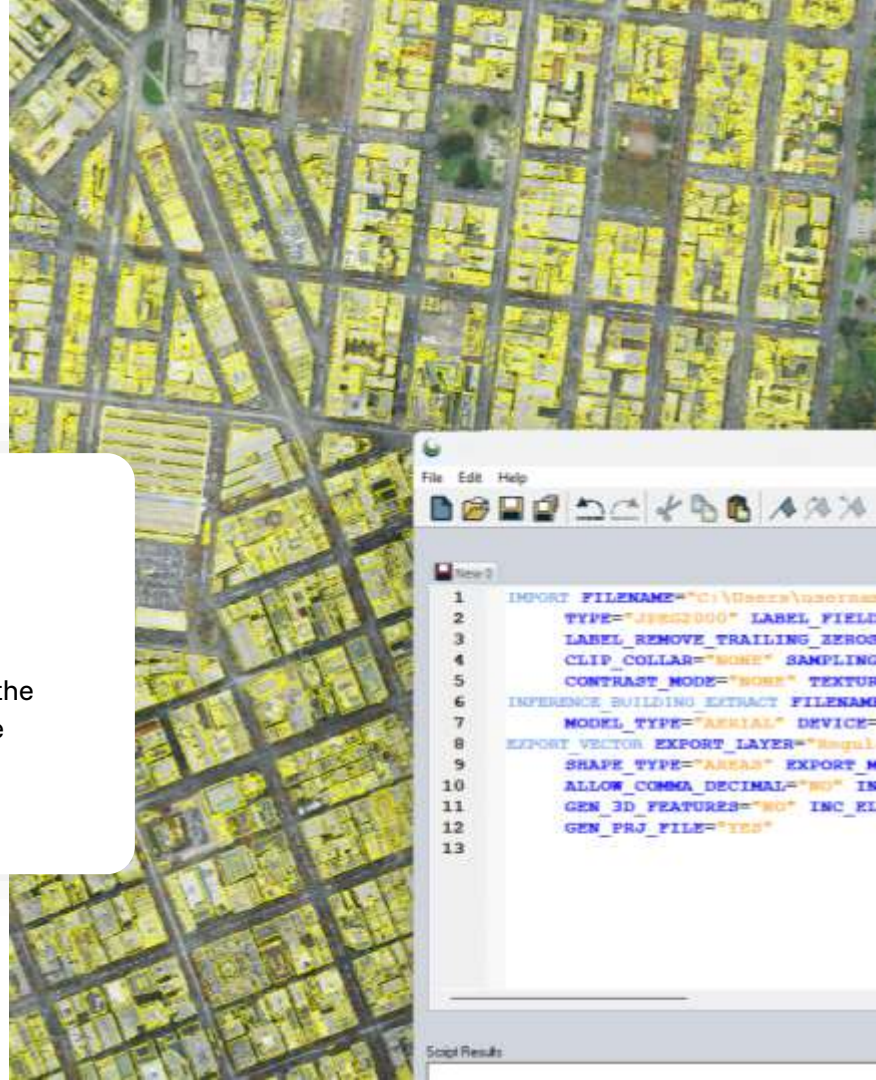
Global Mapper Script

Start Scripting Easily

Use the Script Builder to quickly derive scripts from actions taken in the interface.

Load > Process > Export > Repeat.

Fully automate each step of the workflow and loop over large directories of data.



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Section • 03

Land Cover Classification

Industry Applications

Forestry

Mapping types of canopy and monitoring clear-cut boundaries

Mining

Tracking vegetation reclamation progress and assessing regulatory compliance

Oil & Gas

Assessing environmental impact around drill pads

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Section • 03

Object Detection

Industry Applications

Construction / Mining

Monitoring site conditions through count of heavy machinery and haul truck distribution

Forestry / Mining

Detecting unauthorized vehicles

Emergency Services

Rapid damage assessment by locating impacted buildings

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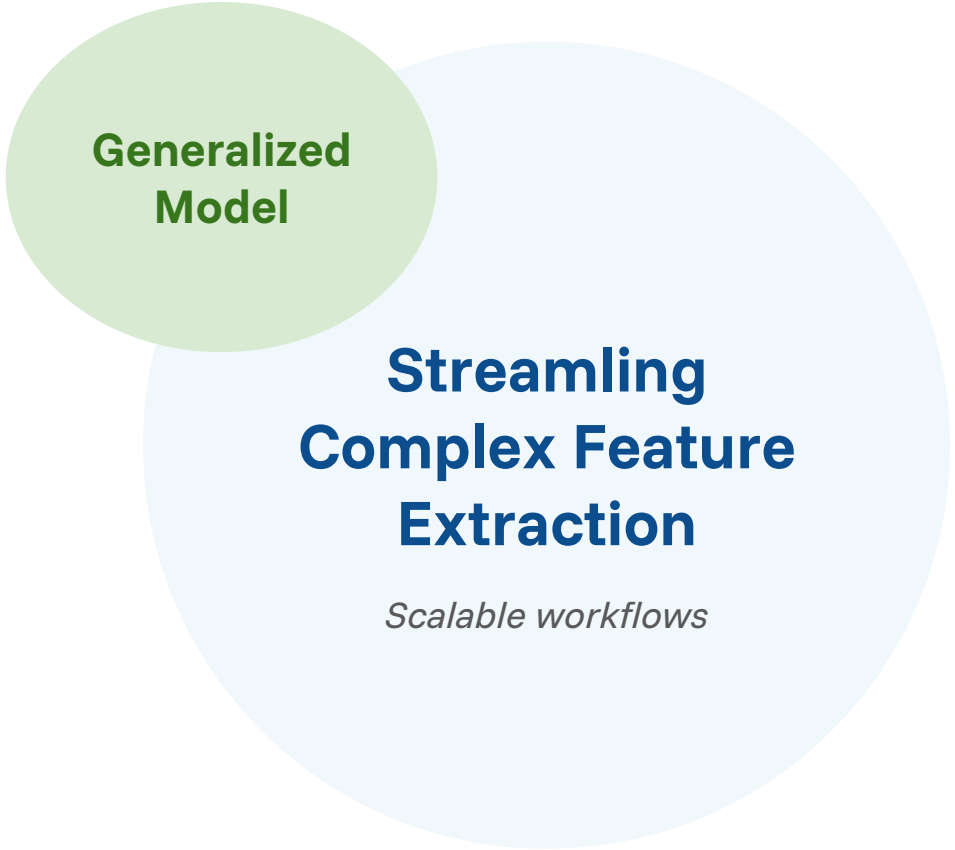
The Path Forward

Increase user ability to automate workflow without custom development



Section • 03

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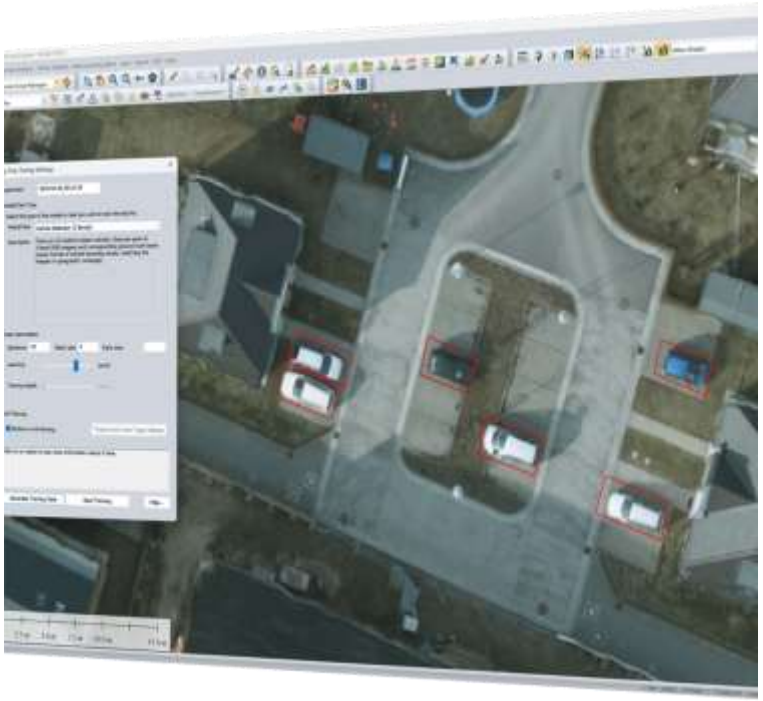
Questions?



For more information:

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