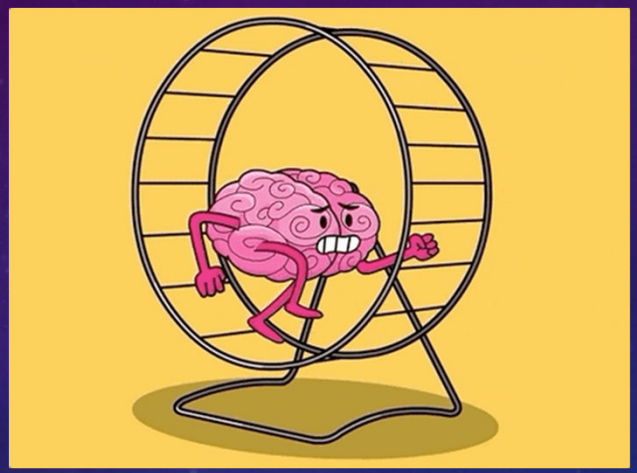
Presented at the FIG Working Week 2025,
6-10 April 2025 in Brisbane, Australia

WHY ARTICULATE THE VALUE OF AI IN GEOSPATIAL?

NIGEL CONOLLY

THE PROBLEM

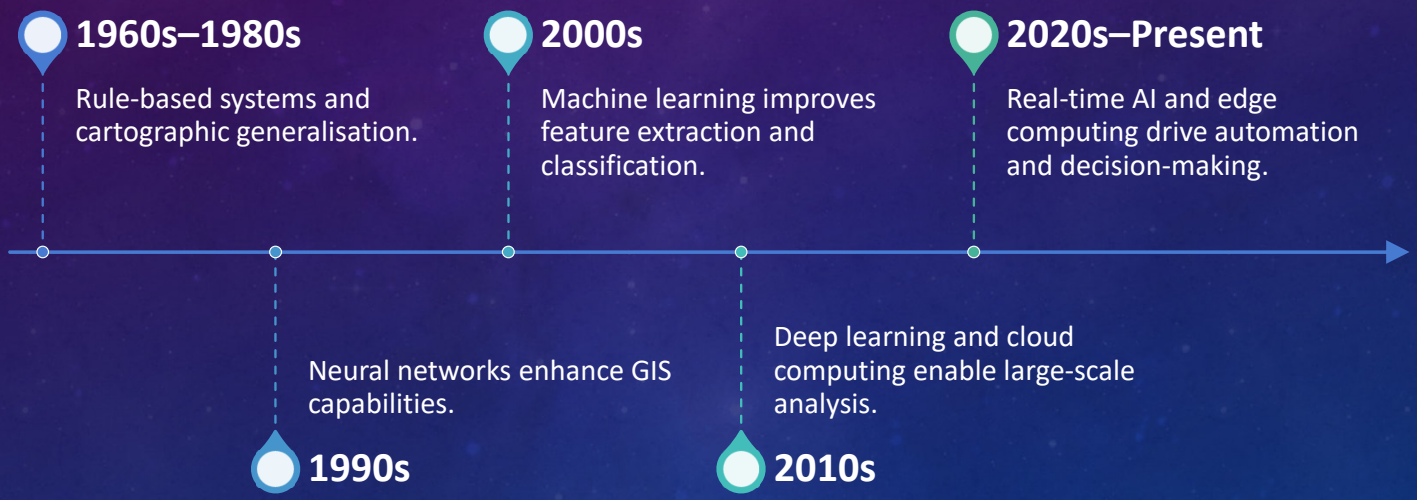


- The geospatial industry is evolving rapidly, yet many professionals adhere to traditional methods.
- Failure to adapt risks irrelevance in an AI-driven landscape.

THE OPPORTUNITY

- AI integration enhances professional impact and unlocks new opportunities.
- Those who embrace AI can increase their value by up to 600%.

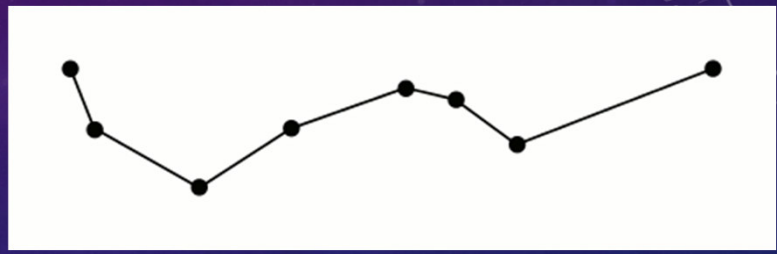
HISTORICAL DEVELOPMENT OF AI IN GEOSPATIAL



1960S

Line Simplification

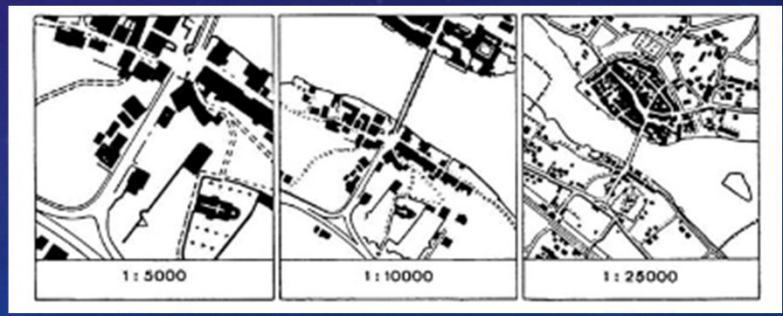
Douglas-Peucker Algorithm (1967) – Line Simplification



Polygon Merging

“This operation, identified by Imhof in 1937,[1] involves combining neighboring features into a single feature of the same type, at scales where the distinction between them is not important.”

https://www.e-periodica.ch/digbib/view?pid=ghl-002:1936:37#60



1970-80S

Consulting business Environmental Systems Research Institute established 1969

1981 released their first product: ARC/INFO, including tools such as PIOS, GRID and GRID/TOPO.

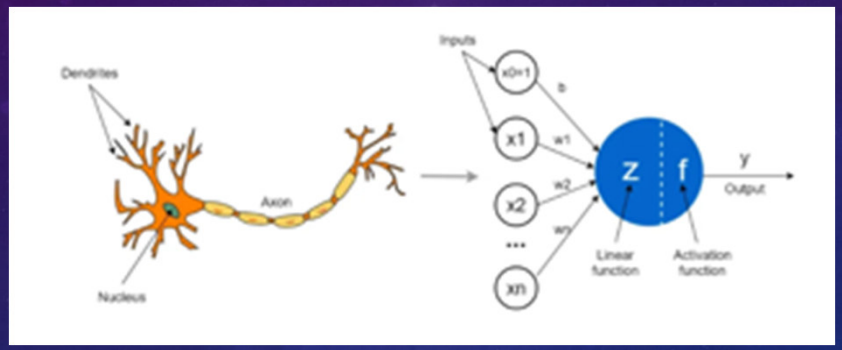
1990S

Artificial Neural Networks

- eg: Supervised Classification

2000-10S

Machine learning & Convolutional Neural Networks

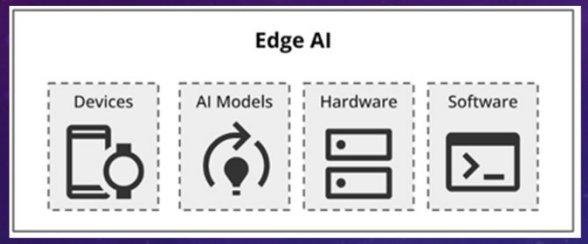


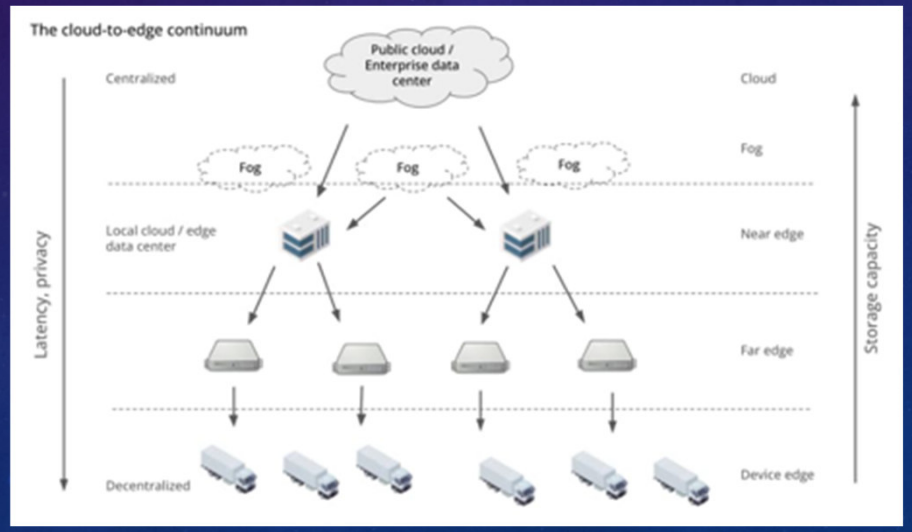
"A Convolutional Neural Network (CNN) is a type of artificial neural network specifically designed for image analysis, excelling at identifying patterns within images by breaking them down into smaller parts and extracting features like edges, shapes, and textures, allowing it to perform tasks like image recognition, object detection, and image segmentation with high accuracy; making it a powerful tool in computer vision applications like facial recognition, self-driving cars, and medical imaging analysis."

https://insightsimaging.springeropen.com/articles/10.1007/s13244-018-0639-9#:~:text=3D)%2DCNN.-,Convolution%20layer,convolution%20operation%20and%20activation%20function

2020S

Edge Computing & real-time AI





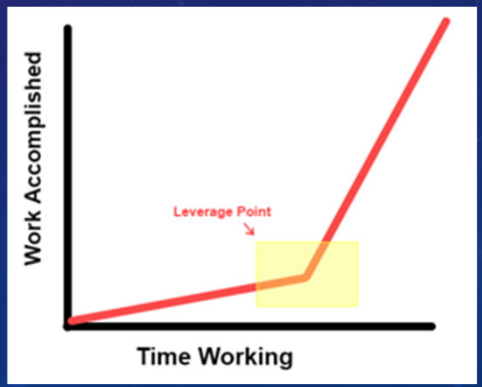
AI IN GEOSPATIAL TODAY

BOOST YOUR PRODUCTIVITY BY 600%

Time from months to minutes.

Eg: 6 months to 10 minutes

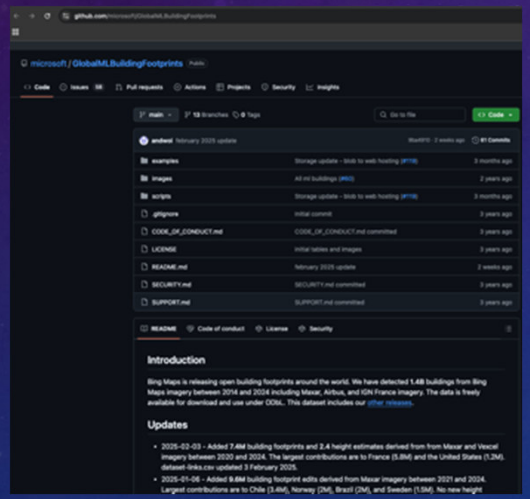
[redacted]



AI IN GEOSPATIAL TODAY

Feature Detection:

AI identifies structures from satellite imagery. Eg: Microsoft Global Building Footprints



AI IN GEOSPATIAL TODAY

Multi-AI Integration:

Different AI models enhance geospatial analysis.

Google Cloud

Cloud Vision API

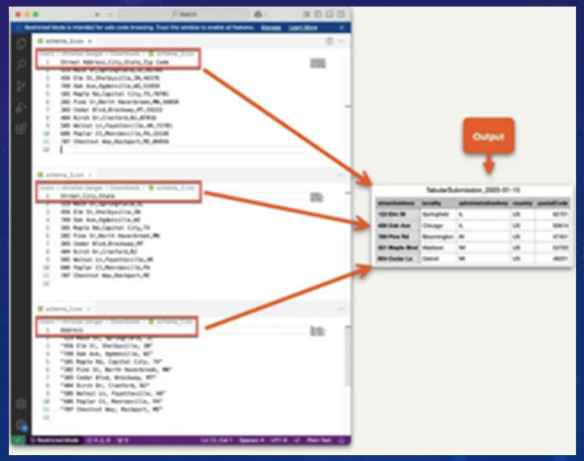
Azure AI Vision

Discover computer vision insights from image and video analysis with OCR and AI

Get started with Azure

Amazon Rekognition

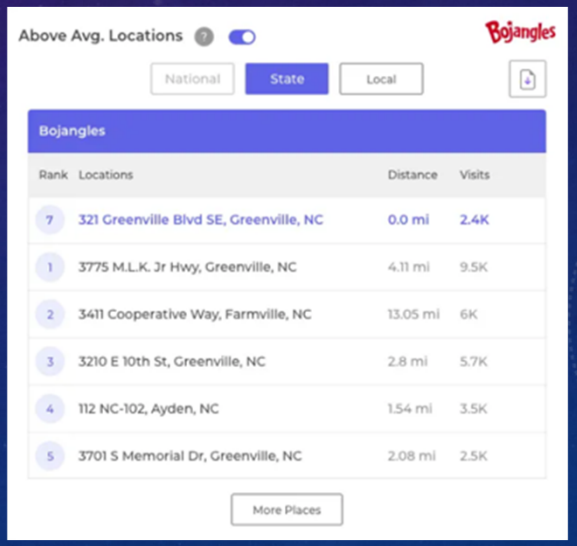
FME by Safe Software



AI IN GEOSPATIAL TODAY

AI for Retail & Site Selection:

AI automates feasibility analysis.



https://www.mapzot.ai/

VALUE PROPOSITIONS OF AI IN GEOSPATIAL

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Precision Agriculture:

AI increases yields by 30% while reducing water usage.

VALUE PROPOSITIONS OF AI IN GEOSPATIAL

Insurance:

AI improves loss ratios by 5% and increases premiums by 15%.

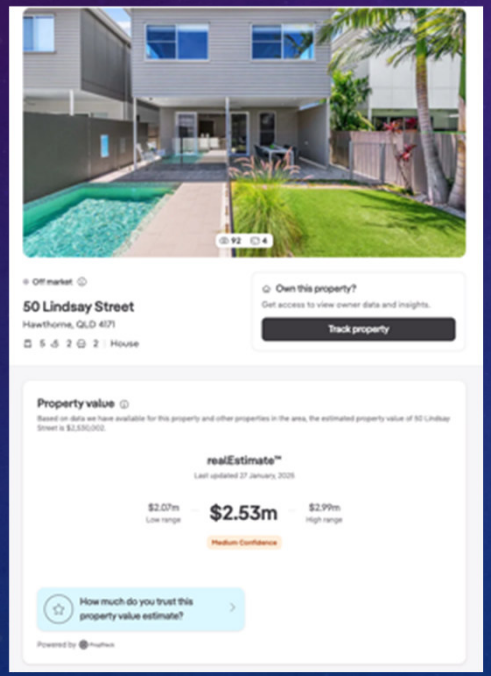
https://www.insurancebusinessmag.com/us/news/property/when-ai-meets-roi-how-datadriven-drones-and-declines-are-shaking-up-property-insurance-502929.aspx

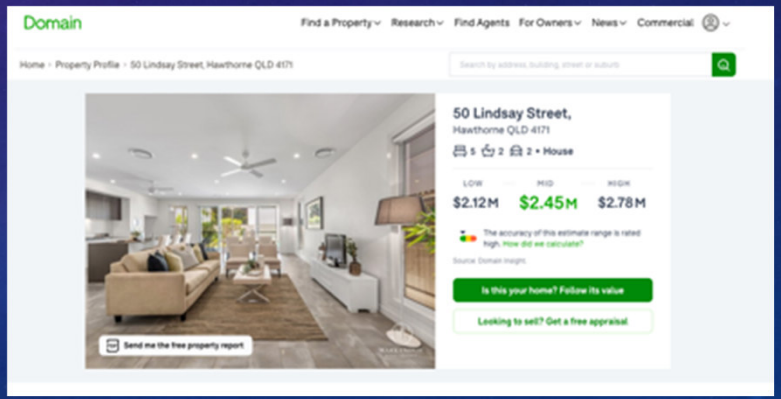
https://www.suncorpgroup.com.au/news/news/DMC-technology#:~:text=Suncorp's%20ability%20to%20utilise%20and,back%20into%20their%20homes%20sooner

VALUE PROPOSITIONS OF AI IN GEOSPATIAL

Real Estate:

AI enhances property valuation accuracy (30%) and speeds up transactions (40%).





CONCLUSION

Early Stage Technology

AI in geospatial resembles the early internet. We're just seeing the first glimpses of potential.

First-Mover Advantage

Early adopters gain competitive edges. They establish industry leadership positions.

Essential Evolution

Embracing AI isn't optional. It's necessary for continued relevance in geospatial fields.

Thankyou … ☺ … Nigel Conolly