

Use AI and Data Science to Increase Efficiency and Generate Insights

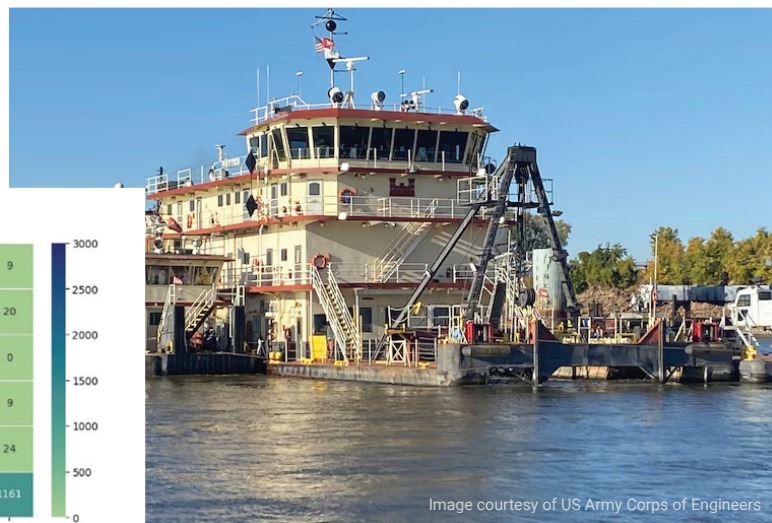
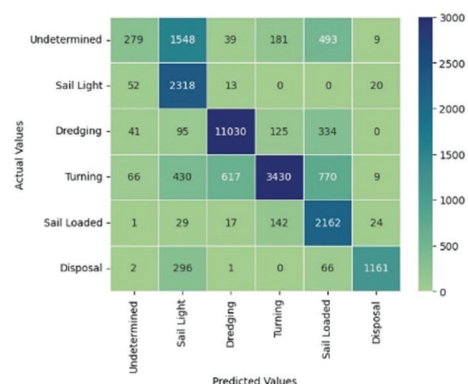
Whether it's applying AI and other data science methods to a wide variety of both traditional and non-traditional geospatial solutions, designing custom solutions to increase the efficiency of complex and/or time-consuming repeatable processes, or creating data derived products and operational documented code, NV5 can help you gain powerful insights into your data.

Leverage Your Structured Data in New Ways

Large quantities of collected or real time data, both geospatial and tabular, can be difficult for organizations to work with and analyze. NV5 develops custom solutions to recognize patterns across single large datasets or a repository of data holdings, often adding value by providing additional insights to data previously collected for a single specific use.

QA and Analysis of Data for the US Army Corps of Engineers

The US Army Corps of Engineers receives hundreds of thousands of sensor observations daily in their cloud infrastructure from dredging vessels for use in navigation planning and policy. NV5 created automated checks to validate incoming data and flag anomalous values. Our team also trained machine learning models to identify dredge states from up to 30 concurrent sensor values across time with a much higher degree of accuracy than a traditional approach allowed.



NV5 is the world's leading geospatial authority driving data and analytics, system integration and software innovation to transform the way organizations and industries enact meaningful change across their communities and the world.

Wrangle Unstructured Data with AI and Large Language Model (LLM) Solutions

Valuable information is often buried in vast repositories of data sources such as technical documents, spreadsheets, sensor observations, and audio/video files. Natural Language Processing can be used to extract valuable information like vertical datums from plot sheets or coordinate locations embedded within contract documents. Newer AI methods like Large Language Model (LLM) solutions can also be used to provide concise contextual answers from text or data, provide insights from complex simulations or models, summarize detailed technical documents, and much more.

Deploying an AI LLM Solution for the US Army Corps of Engineers

The US Army Corps of Engineers required an application to allow Corps staff to quickly query and receive information on dredging policies, methods, and best practices from repositories with thousands of technical documents. NV5 developed an AI LLM solution that uses multiple language models trained on specific dredging topics in a secure Azure IL4 Government Cloud environment.

Natural Language Processing Used to Extract Dredging Coordinates for the US Army Corps of Engineers

The US Army Corps of Engineers has thousands of historical dredging contract documents with information needed to be digitized into geographic formats. NV5 created a tool using Natural Language Processing to extract coordinates from tables and other data attributes embedded in contract documents, greatly increasing the efficiency of the digitization efforts.

Use Remotely Sensed Data and ML to Create Derived Products

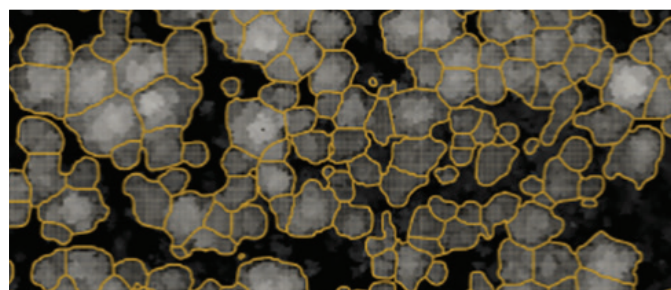
High Resolution Land Cover

Advanced computer vision techniques such as convolutional neural networks, can quickly and accurately derive extensive land cover data from high resolution multispectral aerial imagery. These datasets have enabled Federal and State Agencies to make informed decisions about critical issues such as water resources, habitat restoration, non-point source pollution estimation, and climate mitigation.



Salt Marsh Habitat Mapping

By integrating deep learning with traditional machine learning, NV5 has created a robust and scalable method for generating statewide salt marsh habitat maps. These datasets minimize the need for State and local agencies to conduct field-based sampling in sensitive ecosystems, aiding in the inventory and monitoring of changes due to rising sea levels.



Tree Segmentation

Utilize deep learning and semantic segmentation to delineate individual tree crowns from lidar and RayTraced imagery. This enhances forest resource management by supporting applications like tree counts, stream health analysis, and more.

Persistent Monitoring

ENVI® Inform is a platform to orchestrate the processing and analyzing of large volumes of remotely sensed data to provide insights using standard or custom machine learning models. NV5 uses this platform to monitor large AOIs for changes to the environment, to track and monitor infrastructure development, and to detect objects such as vessels, aircraft, and ground vehicles. NV5 has applied this capability to support oil exploration to increase oil companies' reserves.

Reach out to discuss how NV5 can help you generate insights.

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