

contextere



Case Study

RSV Nuyina Data Fusion

Serco Canada Marine and Contextere formed a strategic partnership in 2019 exemplifying how a multinational defence company can collaborate with an innovative Canadian technology firm to solve complex challenges, while delivering industrial benefits to the economy.

Over a ten-month period from December 2019 to October 2020, Contextere developed data extraction, fusion and curation capability that enable small data to be effectively extracted, cleaned, and mined. Contextere developed machine learning data extraction engines that automatically create accurate, semantically associated data sets from PDF documents, scanned hand-written notes, and other non-standard data sources.

Leveraging Canadian R&D investments, Serco selected the RSV Nuyina icebreaking research and supply vessel to deploy a proof of concept. This new platform was an opportunity to validate the machine learning algorithms' ability to extract and curate maritime data to generate operational insights.

Phase one of the project focused on the identification of data sources as well as data engineering activities to extract information from siad data sources into a format that would be suitable for machine learning systems and develop repeatable and automated extraction processes.

The next phase revolved around the processing of the extracted data. This phase consisted primarily of word embedding techniques which are used to create multi-dimensional

vector representations of text in sentences, paragraphs, and tables that can be used by these algorithms for applications such as question-answering and recommendation engines.

The final phase of this project focused on the development of a Question-Answering (QA) system, which is a specialized application of machine learning that uses natural language processing to find a match for a question vector representation within a reference dataset. Contextere tested its QA capability against the extracted datasets created in earlier project steps to confirm that the algorithms reliably return answers and that appropriate extended correlated information is also identified and provided to the user.

This project successfully established the foundation for a scalable insight engine that would deliver value to SERCO North America and its customers with anticipated end-user impact such as improved MRO execution, optimized fleet planning, reduced shore time, enhanced productivity of workers, and increased uptime of operational assets.



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