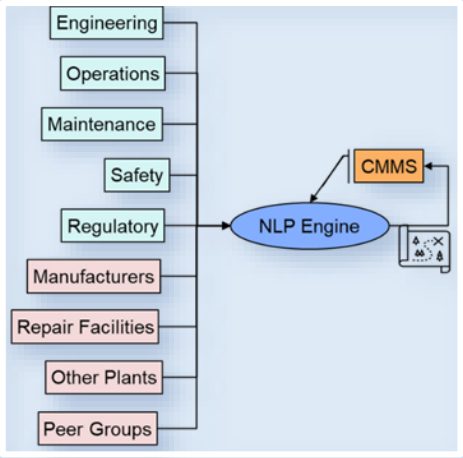
Supplemental Project Notice

NATURAL LANGUAGE PROCESSING (NLP) FOR ASSET INFORMATION SORTING



NLP for Asset Information Sorting

PROJECT HIGHLIGHTS

- Error-proofing equipment documentation within computerized maintenance management system through artificial intelligence.
- Process automation of equipment documentation, such as inspections, work orders, event reports, vendor manuals, and technical bulletins, to the correct equipment asset.
- Can be used by personnel with no power plant knowledge.

Background, Objectives, and New Learnings

A branch of artificial intelligence (AI), natural language processing (NLP) is a way for computers to analyze, understand, and make sense of human language. NLP draws heavily from computer science and linguistics. It enables the analysis of human language, which consists of highly unstructured data. Human language is expressed in infinite ways through many different languages and dialects, different grammar, terms, and so on.

NLP is helping many industries automate processes and increase efficiency, and the electric power industry is no exception. For the power industry, NLP has the potential to improve maintenance and operations across the grid by analyzing maintenance and operational reports and providing insights to plant operators and workers.

EPRI developed an NLP engine to read, analyze and file electronic equipment-related information within the structure of a computerized maintenance management system (CMMS). This research started from a utility's need to improve how it reviewed and mapped this information into its CMMS for future reference and analysis. Existing industry practice is a time-consuming, manual process with varied success and results in less-than-desired equipment-specific documentation. Especially during the initial implementation of a CMMS system, vast amounts of data need to be sorted and moved into the new structure. This often means that only data from a limited timeframe are prioritized. To gain the full value of asset documentation, every document possible should be available.

This supplemental project's objective is to develop the end-user-specific interface for the EPRI NLP AI engine. This project's goal is to develop the software needed to automate documents input to the EPRI NLP AI engine, input the site-specific asset locations (from utility CMMS asset locations), improve the algorithm with a larger dataset, and develop end-user friendly outputs required by plant personnel for using this information in the future.

Benefits

The public can benefit from improved plant reliability and availability through improved equipment management. Participants can benefit from this project through:

- Process automation
- Improved data retention, less human errors
- Enhanced usefulness of retained data
- Ability to quickly address and direct the decades of historical files to the correct location/asset
- Standard asset naming convention out of the engine (location/year/type/etc.)
- Options for storage/linking, (inside CMMS, internal server with link or directory in CMMS)
- Verification reply to sender of report location/requested details
- Verification reporting ability by location/system/UNID/etc.
- Streamlined mode of report submittal

Project Approach and Summary

As this is an AI engine project (continuous learning), EPRI will gather more industry information on plant specific equipment asset structure and plant specific documents mapped to equipment assets from funders to continually improve the EPRI NLP AI Engine.

It will also use a collaborative approach with funders to develop a user-friendly software interface with the EPRI NLP AI Engine that encompasses the range of needs for utilities with respect to equipment asset data mapping and retrieval.

Phase 1

- Collect more asset documents and asset management structures from members
- Retrain NLP algorithm
- Survey members to define software requirements
- Define integration environment (where does the software reside/what tools does the software interact with)

Phase 2

- Prioritize features
- Build out a lab environment based on Phase 1
- Create beta software integrating the necessary features
- Test on EPRI lab environment

Phase 3

- Test beta software at member utilities
- Refine software based on member feedback
- Release full version

Deliverables

The final deliverable is expected to be user-friendly software that automates and interfaces with the EPRI NLP AI Engine to perform equipment asset data mapping and retrieval.

Status reports and project updates through meetings, webcast, and presentations will be provided to funding members through the project.

The EPRI NLP AI Engine can be improved by the data gathering research performed in this supplemental project.

Price of Project

The price to participate in this supplemental project is $40,000, with a total project budget of $200,000. This project is eligible for Self-Directed Funds and Tailored Collaboration.

Project Status and Schedule

This project will begin when a minimum of five funders are obtained. The project is expected to continue for approximately 18 months.

Who Should Join

Utilities that use a computerized maintenance management system for equipment reliability could benefit from participation in this project.

Contact Information

For more information, contact the EPRI Customer Assistance Center at 800.313.3774 (askepri@epri.com).

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Product ID: 3002028559 **Project ID:** 1-118835 **December 2023**

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