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PredictiveIQ Wins Best Paper Award at 16th Annual GVSETS Conference

- *PredictiveIQ was honored to receive the Best Paper Award for the Lab to Logistic Technical Session at GVSETS 2024, highlighting the application of Generalized Physics Informed AI for Prognostics and Predictive Maintenance in the Engine Module on Combat Vehicles.*

Boston, MA – August 14, 2024 – PredictiveIQ, a leading innovator in Generalized Physics Informed AI powered Digital Twins is proud to announce that it was honored to receive the Best Paper Award at the Lab to Logistics Technical Session at Ground Vehicle Systems Engineering & Technology Symposium (GVSETS) 2024 for its pioneering research in Physics Informed Machine Learning and Generalized Physics Informed AI.

The award-winning paper, titled “Physics Informed Machine Learning for Advanced Diagnostics & Prognostics of Ground Combat Vehicles” showcased PredictiveIQ’s developments in advanced Prognostic and Predictive Maintenance (PPMx) algorithms. PredictiveIQ introduced novel approaches utilizing Physics Informed Machine Learning (PIML) for ground combat vehicles PPMx applications predicting engine health. PredictiveIQ presented how its model integrated a physics-based simulation of engine wear with time history of oil viscosity and engine speed to accurately predict engine health. Furthermore, PredictiveIQ conducted uncertainty quantification assessments to determine the impact of varying parameters on engine health prediction.

“We are thrilled and deeply honored to receive won this award,” said Juan F. Betts, CEO at PredictiveIQ. “The recognition shows the hard work and dedication of our R&D team, whose innovative approach has pushed the boundaries of what is possible with AI in diagnosing and predicting vehicle health. We are excited about the potential impact of our findings and look forward to continuing to drive progress in this field.”

PredictiveIQ’s award-winning paper was recognized for its novel Physics Informed Machine Learning algorithms to enhance the accuracy of predictive models when experiment data is limited. This method addresses key challenges and opens new avenues for future research and application.

Paper Abstract

We introduce novel approaches utilizing Physics Informed Machine Learning (PIML) for advanced diagnostics & prognostics of ground combat vehicles (CV). Specifically, we present the development of a PIML model designed to predict the health of engine oil in diesel engines. The condition of engine oil is closely linked to engine wear, thus serving as a crucial indicator of engine health. Our model integrates a physics-based simulation of engine wear in diesel engines, leveraging a time history of engine oil viscosity and engine speed as key input parameters. Furthermore, we conduct uncertainty quantification to assess the impact of varying parameters on engine oil health prediction. Additionally, our model demonstrates the capability to enhance low-fidelity physics models through the integration of a limited set of experimental data. By combining data-driven techniques with physics-based insights, our approach offers enhanced diagnostics and prognostics capabilities for ground combat vehicles, thereby facilitating proactive maintenance and optimization for operational readiness.

About PredictiveIQ.

PredictiveIQ develops Generalized Physics Informed AI powered Digital Twins that utilizes advanced data-driven neural concepts and physics informed machine learning (PIML). These algorithms reduce by orders of magnitude (1,000X) the amount of ML training data, increases

predictive accuracy, improves generalization, and enables modular updating. This capability can be deployed, embedded, on-edge or on-cloud, providing our customers with real-time actionable decision making. A leading application for this capability is Predictive Maintenance Digital Twins, which can be applied in industries such as: Defense, Mining, Transportation, Oil & Gas, Agriculture, Marine, Automotive, and Aerospace.

For more information visit our website https://www.predictiveiq.com/