

New thinking enters an age-old field

by Antonis Nikitakis, AI Director, DeepSea Technologies

Handling distributional shift is one of the greatest obstacles to the widespread adoption – and impact – of artificial intelligence (AI) across all industries. This is especially the case in shipping, and now the world's top experts, including our company, are collaborating to explore solutions to this issue, likewise debunking some of the common misconceptions that cause apprehension in the industry.

We have focused on managing distributional shift since DeepSea's inception. It is a critical prerequisite to using the technology to generate real impact for companies now and in the future. Understanding the full picture of how data generated by a ship shifts over time is crucial to accurately model vessels, which is key to unlocking shipping's huge decarbonisation potential and minimising fuel waste

A great example of a distributional shift is found in maritime – where the entire ship data set moves over time due to hull fouling. Fouling can have a significant impact on operations that can, in turn, lead to major inefficiencies. Moving forward, vessel data can be used to calculate how to counter this issue, amongst others.

Excessive and overhyped?

DeepSea's team has partnered with other industry-leading institutions and researchers in the field of AI, culminating in the launch of the **Shifts Project**, an international collaboration of academic and industrial researchers dedicated to studying – and solving – problems associated with distributional shift. Ultimately, the initiative aims to maximise the real-world impact of AI technology.

Maritime has been chosen as one of two global case study challenges (the other being distributional shift concerning the treatment of the chronic condition of multiple sclerosis). Alongside DeepSea, the Shifts Project is an international effort involving numerous institutions, including the universities of Cambridge, Basel, Lausanne, and HES-SO Valais. The initiative focuses

on building a cross-disciplinary & international community, bringing together core machine learning (ML) researchers studying distributional shift and applied ML researchers who work on tasks affected by distributional shift in the real world.

Parts of the shipping industry remain sceptical about the technology amid accusations of AI being excessive and overhyped – a view held most prevalently by the more traditionalist and conservative players. It is thus crucial that maritime digital tech experts work to debunk false assumptions, addressing criticism in a fair, honest, and responsible way.

Historically, shipping's decarbonisation progress has also been hampered by the split incentive issue, which stems from antiquated charter party agreements prioritising quick arrival above all else.



Photo: Canva

Despite the availability of cost and performance efficiency gains offered by the likes of, among others, AI-based solutions, this dynamic divides responsibility for fuel costs between shipowners, operators, and charterers. What results is the lack of a clear value proposition to invest in eco-efficiency technologies.

The reality of ship-at-sea data

To cement AI's role as a major ally for shipping companies in their decarbonisation-cost-fuel efficiency efforts, credible researchers working to popularise AI adoption in maritime must pursue rigorous methods of proving the real value of what they're creating.

One way of doing this is to develop robust models, which will be essential in enabling the effective deployment of AI-based technology, and, in turn, reduce the carbon footprint of global supply chains. This will also act as a stamp of approval for all companies working with AI in the shipping industry.

The sector also needs a benchmark for evaluating AI competence within a vessel model to help assuage wider scepticism. **Real-life, tangible examples of AI 'working' at sea are the most direct way of verifying the efficacy of the technology.** As it stands, most model accuracy figures reported in publications and marketing materials fail to bear relation to

the actual usage of those models in the real world. The reality of ship-at-sea data is highly variable, and models must capture a much greater degree of complexity than the commonly-seen metrics indicate.

None can compete

Notwithstanding the above, tangible progress is being made. Earlier this year, DeepSea announced a partnership with the ro-ro & vehicle logistics heavyweight Wallenius Wilhelmsen. The company will adopt a fully AI-based approach to voyage optimisation across its 120+ fleet. The collaboration resulted from 18 months of step-by-step testing, delivering figures such as a 6.9% improvement in vessel efficiency and more than 170kt predicted reduction in emissions across the fleet.

This represents a watershed moment for shipping's digitalisation, marking a key milestone in the mass uptake of AI and its practical application via voyage optimisation as a crucial enabler of operational efficiencies. Or as Geir Fagerheim,

Wallenius Wilhelmsen's SVP of Marine Operations, puts it, "No human being, no matter how many years of experience they have, can compete with these automated sailing instructions. It reduces emissions, it reduces fuel consumption, and it increases safety during operation. It is a win-win in all aspects of sailing."

A huge responsibility

As incoming regulations aim to lower shipping's environmental impact, ensuring that all opportunities for emissions reduction and decarbonisation are being explored and utilised will be crucial to commercial success.

The digital tech sector has, therefore, a huge responsibility. It must do all it can to support an honest and transparent approach to AI to help the wider shipping community realise the power of an AI-based approach and alleviate its limitations. Only in this way will AI experts be able to make an increasing impact on shippers' bottom lines and the planet's sustainable future. ■



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DeepSea Technologies is a maritime tech company specialising in vessel performance monitoring and optimisation. We combine many years of experience in the shipping industry with deep expertise in software, hardware, and artificial intelligence. DeepSea has built a pioneering next-gen performance routing tool, Pythia, which offers shipowners an average of 8% savings in emissions and fuel consumption. The company is also part of the **10% initiative**. Go to www.deepsea.ai to learn more.