AI in transportation: DigiHaul's vision for decarbonising the UK's road network

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11 December 2023

An independent clothing manufacturer has just received its first order from a retail partner after the business confirmed it could meet a short delivery lead-time. The order is very lucrative and there is high business expectation that this is a strategic relationship that they want to grow. Excellent news!

There is a challenge - Transportation. Due to the short notice of delivery, the company's current haulier cannot provide them with a vehicle. The next few hours are wasted as the business tries to find an alternative. They call a number of hauliers, comparing prices, suitability, and availability before finding one with the capacity to take on the job at an acceptable price within the tight delivery constraints. One core concern for the business is that it works hard to maintain its Ethics & Sustainability models. The haulier they have had to select can load the order in the required timescales, but it will only be half-full. Additionally, on the return journey, it will be empty, causing a high level of consternation around their sustainability messaging.

There follows a tense period of time where the business is waiting to hear if the products have been delivered to this important customer. They hear nothing and hope for the best and eventually receive a message the next day informing them that the delivery is completed. An invoice is received some time later and the haulier is paid for its services.

Wouldn't it make more sense if the shipment could be matched instantly to the most appropriate haulier? If the vehicle could be loaded with goods from other companies to maximise its efficiency on both legs of the journey? If the customer could track the progress of its products and if payment could be managed digitally?

Enter DigiHaul. A UK-based startup aimed at reducing waste and improving efficiency in the transportation sector, DigiHaul makes use of an innovative digital freight-matching platform to tackle the financial and environmental costs of empty running – currently estimated at 20% of all journeys.

"DigiHaul was born of frustration," says Martin Willmor, the company's CEO and founder. "Transportation tends to be carried out in silos: companies are good at optimising their own networks and looking after their own customers but they don't think laterally about how they could collaborate

with other networks. That builds inefficiency into the sector and leads to a lot of empty running. DigiHaul allows operators to plug into a bigger network, helping to create fuller loads and taking carbon off our roads. We want to challenge the idea that things have to be done the way they've always been done."

"Data is our currency"

Dr Wenjia Tang is DigiHaul's Head of Data and a member of the first cohort of experts in residence in *The Turing Way* Practitioners Hub. Wenjia's role at DigiHaul is to optimise the company's use of data, making sure transportation efficiencies and customer service levels are as high as possible. "Data is our currency at DigiHaul," says Wenjia. "Our priority has been to gather the right types of data and develop our platform, but now we are thinking about how advanced data science and techniques like machine learning and AI can help us to deliver an even better service."

Areas in which DigiHaul hopes to leverage developments in machine learning, AI and data analytics include:

- using generative AI to answer employees' queries or requests around particular data on the DigiHaul platform, such as who is the highest performing carrier over the past 3 months.

- automatically checking unusual aspects of a booking, for example, if the shipment appears to have a very low weight, to protect the efficiency of the journey and the quality of DigiHaul's data

- advanced analytics on carriers' past performance to allow shipping customers to pick the best match based on more than just cost

- algorithms to enable loaded return journeys – known in the industry as 'backhaul'

- codifying decades' worth of employees' knowledge and experience in the transportation sector to help algorithmic models make better recommendations.

By seamlessly integrating AI into daily operation of road haulage networks, we can optimise route planning, reduce empty running and pave the way for an environmentally conscious and technologically advanced transportation ecosystem.

A digital startup in a traditional industry

"We are quite unusual in the transportation sector, which has generally been a late adopter of technology," says Wenjia. "As a startup we benefit from being nimble, flexible and open to adopting new technologies, but the traditional nature of the industry can create challenges."

Fernanda Vasconcellos, DigiHaul's Data Analytics Manager, agrees: "Some of our ambitions, such as giving customers realtime information on their shipments, only work in practice if drivers and carriers are using our app and providing the right data for the platform – so we are working to improve adoption. Another task we are addressing is to make sure employees have the skills to use future developments like generative AI, and that we communicate the benefits that these technologies can have in people's day-to-day jobs to encourage their use."

To help with this, the company has introduced a training programme called Digified to give employees a general overview of data concepts. Digified 2.0, covering more specific aspects of DigiHaul's suite of digital products, is due to be launched next year.

Skill-building in this sector can leverage open source resources such as *The Turing Way*, as well as public sector initiatives like Innovate UK BridgeAI, to promote best practices in driving the adoption of AI and data science in transportation.

Sharing data for everyone's benefit

"Our longer-term ambition," says Fernanda, "is to open up our internal data and models responsibly for use by others, which will help drive up efficiency across the whole sector." This 'greater good' approach, adds Martin, will take into account important considerations such as data privacy and security – and will shine even more light on the issues of industry wastage and carbon emissions that DigiHaul was set up to tackle.

Undoubtedly more work needs to be done in a sector that has been long suffering from inefficient information flow that resulted in siloed planning activities.

"Optimisation of the transportation sector can only happen if companies work collaboratively and have good visibility of the whole network," concludes Wenjia. "Working in silos limits our ability to do that. If we can be better at sharing data and working together, we are making the cake bigger – and everyone can have a bigger slice."

Key takeaways

- While transportation companies efficiently manage their own networks, unlocking sector-specific efficiency through lateral collaboration with other transportation networks remains a challenge.

- DigiHaul, an early adopter of data and AI in the transportation sector, facilitates operators' connection to a larger network, optimising load efficiency and reducing carbon footprint on our roads.

- Startups already adept at collecting and utilising data can leverage AI and Machine Learning technologies, drawing insights from historical data to proactively address unique challenges in the future.

- The crucial elements of open data, open standards, and open models in data science and AI technologies are instrumental in dismantling silos, fostering growth, and ensuring success for startups within the broader sector.

- Adopting AI technologies with open practices in transportation sectors will not only enhance commercial success but also yield societal benefits. This endeavour, however, necessitates investment in skill-building opportunities, exemplified by organisational initiatives like Digified at DigiHaul, open source projects such as *The Turing Way*, and public sector programs like BridgeAI.

Acknowledgements

Cite this publication