AICA NEWSLETTER, APRIL 2023

Research project on avoiding carbon leakage with artificial intelligence

In the autumn of 2021, the Vinnova-funded project AICA was started with the aim of investigating how Artificial Intelligence can be used to better calculate products' carbon emissions and prevent carbon leakage in the EU's emissions trading system. The project is a collaboration between Linköping University, 2050 Consulting, Toyota Material Handling, Alfa Laval and Hexatronic.

The path of products from raw material to use and waste is long. It often goes through complex supply chains, countries and continents. In that situation, relying on manual calculations as a basis for both the company's own sustainability work and any international agreements between countries is difficult, time-consuming and risky. Artificial intelligence has given us completely new opportunities.

In the AICA project, therefore, a more efficient calculation system based on artificial intelligence is the goal. The project includes both researchers and company representatives. Through good cooperation between the project's partners, the companies and Linköping University, the first steps have now been taken to achieve the desired results. During the first year of the project, we have been able to establish that some sources and calculations are better than others. We have also learned that even very simple products can involve enormous complexity when it comes to carbon dioxide emissions

Photo: Our project members gathered for dialogue in the spring of 2022.

Report from the project manager

Halfway into the project, we have started to get interesting results that have brought us closer to the project goals. Markus Ekelund, project manager for AICA and CEO at 2050 Consulting, shares his view on the project's progression.

"The project is in an exciting phase where our various sub-projects are beginning to converge. We have now received confirmation that one of the major problems with producing a good and safe Carbon Footprint is access to data.

On the one hand, it is difficult to trace where materials from upstream in the value chain, and on the other hand there is sometimes a direct reluctance from suppliers to share the information due to competitive reasons.

Lack of data is of course a major challenge for an AI system, but the project has identified a number of ways in which AI can instead contribute to overcoming the obstacle of lack of data. Among other things, by identifying where the large emissions occur and where the large uncertainties in the calculations are located.

In addition to continued interviews and documentation for what the companies require, the AI tool is now starting to practice on all the existing EPDs and LCAs we still managed to collect. It will be very exciting to see how far we can go on the road to more robust footprint calculations!"

To train an AI
A large part of the AICA project involves investigating how Artificial Intelligence can be used to better calculate products' carbon dioxide emissions. Part of that is also teaching an AI to do these calculations. One of those working on it in the project is Oskar Hidén at Linköping University.

Who are you and what do you do in the project?

My name is Oskar and I am a PhD student in Artificial Intelligence (AI) at Linköping University. Although we don't usually use the term AI ourselves, we tend to talk more about Machine Learning. We teach a machine (computer) to perform, typically classifications or estimations based on observed data. My role in the project mainly belongs to sub-project 3, where we will design and create a prototype for the AI system.

What is the biggest challenge so far?

The biggest challenge is definitely around data, and getting access to the required data. We have had to go back to the drawing board to try to think one step further than the AI system. An important part going forward will be the underlying database, which the AI system can then run on top of.

Picture: Oskar Hidén, PhD student LiU

What do you think is the most exciting result so far in the project?

The AI techniques we want to test have long been ready, but we have not been able to evaluate the techniques on this specific case. Precisely because of the lack of data. The most exciting thing going forward will be getting to do it!

AICA

AI-Powered Carbon
Border Adjustments

Vill du veta mer om AICA-projektet?

Besök hemsidan https://2050.se/aica-ai-powered-carbon-border-adjustments/
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