**Project #1: The environmental footprint of investments in Artificial Intelligence**

AI has the potential to help tackle some of the pressing global challenges. From a climate mitigation point of view, **AI has been proven effective in transforming entire industries:** from enabling low-carbon electricity sourcesand improving efficiency in the transport[[1]](#footnote-1) and building sectors, to optimising entire supply chains. **AI also contributes to climate adaptation,** by allowing a more precise identification of risks, supporting the design of holistic policies and enhancing observations across time and space. Interest around the potentialities of AI capabilities in sustainability has surged in the research, policy and private sector communities and applications are growing at unprecedented rate[[2]](#footnote-2). Despite this enthusiasm, AI’s environmental impacts raise concerns, especially due to the expansion of generative AI models’ computational needs.

The goal of this thesis will be to compute the emission profiles of investments in Artificial Intelligence. Starting from a large-scale proprietary database of investments in AI, the student will work with the supervisor to address the carbon profile of different AI systems. As investments are geo-located, each location will have its own energy mix.

The key objectives of the thesis will be:

1. Create a taxonomy of AI investments
2. Compute carbon profiles per type of investment per country mapping energy mix profiles to investment locations

The ideal student has excellent data analysis skills. Previous knowledge on panel data is not required, but welcome.

The Master thesis will be integrated in the Horizon Europe project LIBRA (101150729) and will be carried out between Engineering Mechanics Department and the KTH Climate Action Center.

1. Hina *et al.* in Hina et al., Springer Inn. in Commun. and Comp. (2022) [↑](#footnote-ref-1)
2. Tomašev *et al.,* Nat Commun 11, 2468 (2020) [↑](#footnote-ref-2)