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Sustainable AI: measuring and reducing the carbon footprint of deep learning model development and inference



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Abstract

Artificial Intelligence (AI) has become a pervasive technology in modern societies. Naturally this has resulted in questions being raised regarding the ethical use of AI. However, a relatively under-studied aspect of modern AI is the relationship between AI and the environment. Used correctly AI has the potential to help our societies become more environmentally sustainable. At the same time modern AI, and in particular large Deep Learning models trained with powerful computers using massive datasets, have a direct environmental cost. In this talk I will discuss the environmental cost of modern AI practices and describe some of the ongoing research that is attempting to make AI more environmentally sustainable.

Biography

John is a Professor of Computer Science at Technological University Dublin. He is the Academic Leader of the Information, Communication and Entertainment (ICE) research institute, and a co-Principal Investigator at the Science Foundation Ireland ADAPT research centre, and a co-Principal Investigator at the SFI centre for PhD training in digitally enhanced reality (D-REAL). John has over 25 years of research experience in Artificial Intelligence, with a focus on the topics of natural language processing and machine learning. John has authored three books: Fundamentals of Machine Learning for Predictive Data Analytics (2020, MIT Press), Deep Learning (2019, MIT Press), and Data Science (2018, MIT Press). John's lab carries out research on natural language processing, machine learning for health and also on the carbon footprint of deep learning. John's presentation at SEMICON will be on this last topic, the environmental impact of artificial intelligence.