Data-Centric AI

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Abstract

Artificial Intelligence (AI) has historically relied on two key elements: data and algorithms. However, the traditional Model-Centric AI paradigm has typically emphasized algorithms, often handling data as static entities. Data are typically gathered, pre-processed, and kept unchanged, with significant efforts focused on refining learned models. This conventional approach has led to the development of increasingly complex and opaque decision models, requiring substantial effort in data training. On the other hand, the emerging Data-Centric AI (DCAI) paradigm focuses on the systematic and algorithmic generation of optimal data to fuel Machine Learning (ML) and Deep Learning (DL) techniques. The primary aim of the DCAI paradigm is to improve data quality, thereby achieving model accuracy deemed unattainable levels through model-centric techniques alone. In this talk we will discuss the transformative effects of recent advancements in the DCAI paradigm on the future use of AI, ML and DL in data science. The objective is to inspire further innovations in DCAI research, ultimately influencing the future landscape of in data science applications.

Short bio

Donato Malerba has been a full professor of computer science at the Department of Computer Science of the University of Bari "Aldo Moro" since 2006. Prior to this, he served as an associate professor (1998-2006) and researcher (1991-1998). He held the position of Head of the Department of Computer Science from 2015 to 2022 and served as Director of the CINI National Lab on Big Data from 2014 to 2021. Additionally, he acted as the Coordinator of the PhD program in Computer Science from 2010 to 2015. Professor Malerba has been a member of the Board of Directors of the Big Data Value Association (BDVA) from 2015 to 2016 and a member of the Steering Board of the EU Public-Private Partnership (cPPP) Big Data. His research interests primarily focus on data science, encompassing machine learning, data mining, and big data analytics, along with their applications. He has coordinated the local units of several EU and National projects in this field. Currently, he serves as the scientific lead of the spoke 6 - Symbiotic AI - of the National project FAIR (Future Artificial Intelligence Research). With over 340 articles published in prestigious journals and conference proceedings, Professor Malerba has established himself as a prolific researcher. He has also held roles as PC co-chair and General Chair at several international conferences and has been involved in the editorial boards of several prominent journals in Machine Learning, Data Mining and Knowledge Discovery, as well as Artificial Intelligence.

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