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Machine Learning Paradigms

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Introduction

Machine learning has proven to be a viable alternative to physical models for metal additive manufacturing quality prediction and process optimization. However, the intrinsic "black box" character of ML approaches like artificial neural networks has made it difficult to understand ML results in the context of the complicated thermodynamics that control AM. While the practical benefits of machine learning justify its use, its value as a trustworthy modeling tool is ultimately dependent on model integrity and conformity with physical principles. Machine learning techniques, in particular, are motivating starting to emerge paradigms to support multiple the clouds, and ML techniques are essentially enhancing the usages of these paradigms by solving a variety of problems also including scheduling, resource provisioning, resource allocation, load balancing, Virtual Machine (VM) migration, offloading, VM mapping, energy optimization, workload prediction, device monitoring, and so on. However, a full review concentrating on multi-paradigm integrated architectures, technical and analytical features of these paradigms, and the role of machine learning techniques in new cloud computing paradigms is still lacking, and this topic need further investigation [1].

Description

Tensor operations are well suited to the dataflow paradigm due to their iterative nature and massive volume of data. For speed, complexity, power savings, and time between failures, all dataflow solutions are compared to the associated control-flow implementations [2]. The fundamental contribution of this paper is to categorise current tensor operations implementations in contexts with restricted resources into four architectural approaches and to suggest energy efficient solutions.

Social media contains one of the most well-known human information behaviours, which has developed quickly to establish a new data-driven paradigm that relies on data-intensive digital environments to interact, cooperate, express ideas, and support choices. As a result, social media has established itself as a unique information asset for value co-creation, as it allows people to actively express their ideas and sentiments on all aspects of contacts with an external entity [3]. Despite recent studies on the theoretical underpinnings of social media in open service innovation, practical demonstrations of actionable insights are restricted, owing to the large amount of large amounts of data provided by social media. This issue is addressed by offering an evidence-based study that use machine learning algorithms to distinct project actionable insights from this data-driven paradigm [4,5].

Conclusion

According to current trends, autonomous software that optimizes decision-making and energy distribution operations will eventually govern energy demand and supply. New cutting-edge machine learning (ML) technologies are critical to improving decision-making in energy distribution networks and systems. To illustrate the importance of this field of research, our study focused on data-driven probabilistic ML approaches and their real-time applications to smart energy systems and networks. This research focuses on two main areas: I the use of machine learning in fundamental energy technologies, and ii) ML applications for energy distribution utilities. Energy consumption and price forecasting, the merit order of energy price forecasting, and the consumer lifetime value are all explored Machine learning areas in energy distribution systems. Power supply and usage, grid edge systems and distributed energy resources, power transmission, and distribution systems are all covered briefly in terms of cybersecurity. The main purpose of this research was to identify common challenges that may be beneficial in future ML studies for energy distribution operations.

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