

THE MANAGEMENT PROCESS OF ORGANIZATIONS ADOPTING MULTI-AGENT SYSTEMS THAT SUSTAIN THE ACCELERATION OF DISTRIBUTED NEURAL NETWORKS AT SCALE

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ABSTRACT

The paper intends to investigate the management process for adopting multi-agent systems and their impact on a data-driven organization. While enabling distributed artificial intelligence to process data, today's organizations gain additional knowledge over insights provided by artificial neural networks present through multi-agent systems. Distributed neural networks revolutionize the decision-making, prediction ability, and real-time reactivity systems of the mobility and industrial landscape of present times. Contributions and conclusions emerge from leveraging impact and observations from various use cases, and critical aspects regarding the management process are revealed and highlighted. The purpose is to uncover technological, legal, ethical, and social aspects and stimulate the adoption of distributed artificial intelligence through the joint development of machine learning through multi-agent systems.

KEYWORDS: *distributed artificial intelligence, multi-agent systems, machine learning, artificial neural networks*

1. INTRODUCTION

Line of business decision-makers with a strong focus on outcomes are increasingly accelerating the adoption of artificial intelligence functions such as voice recognition, chatbots, digital assistants, and business intelligence software that increases their operational efficiency and capabilities. Knowledge-based organizations rely on processes that reveal the power of data lake and Big Data architecture, high-performance computing, and distributed computing through multi-agent systems. Human designed strategy and wisdom emerge through mathematical, statistical, and software development by using and processing large amounts of data ranging up to petabytes/day. In the pursuit of improving computational models emerging through software 2.0 systems, artificial neural networks become more productive. Why do multi-agent systems play an essential role in the development of artificial neural networks? Artificial intelligence platforms used for processing petabytes in scale per day are dependent on the logical, time-to-insights dependent processes for providing real-time results. Many methodologies that approach big-data concepts such as data lakes include multi-agent systems that divide complex processes into smaller, separated parts. Each agent acts simultaneously as an autonomous entity is independent of its superiors and as a collaborative part of a system of agents. Dynamic structures with the ability to adapt to the needs of processing specific tasks and multi-agent systems are essential aspects of distributed artificial intelligence systems. The different scenarios that arise in the agent to agent, agent to agents, and agents to agents interaction reveal the need for a rapidly changing and adapting a model that encapsulates the

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