NEUROMORPHIC COMPUTING

Seminar Report

Submitted By

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CERTIFICATE

This is to certify that the Seminar entitled **"NEUROMORPHIC COMPUTING"** has been submitted by **STEPHEN THANKACHAN (Reg.No 223242210111), Semester IV** in partial fulfillment of the degree of Master of Computer Applications of Mahatma Gandhi University, Kottayam during the period 2023-2024.

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Ms. Sherry O Panickar
(Faculty guide)

Ms. P. Shija Paul
(Head of the Department)

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ABSTRACT

Neuromorphic computing represents a revolutionary approach to computing, inspired by the architecture and function of the human brain. This abstract delves into the burgeoning field of neuromorphic computing, outlining its fundamental principles, current advancements, and potential applications. At its core, neuromorphic computing seeks to emulate the brain's neural networks through the use of hardware and software designed to mimic the brain's synaptic connections and neuronal behavior. Unlike traditional computing paradigms, which rely on sequential processing and explicit programming, neuromorphic systems harness parallel processing and learning algorithms to perform tasks with remarkable efficiency and adaptability.

This abstract provides an overview of the key components of neuromorphic computing, including spiking neural networks, memristors, and neuromorphic hardware architectures such as IBM's TrueNorth and Intel's Loihi. These components enable neuromorphic systems to excel in tasks such as pattern recognition, sensory processing, and adaptive control, making them particularly well-suited for applications in artificial intelligence, robotics, and IoT devices. Furthermore, this abstract discusses the implications of neuromorphic computing for the future of technology and society. By bridging the gap between biological and artificial intelligence, neuromorphic systems have the potential to revolutionize fields such as healthcare, cybersecurity, and autonomous systems. However, challenges such as scalability, energy efficiency, and ethical considerations must be addressed to fully realize the promise of neuromorphic computing.

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