Editorial

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Biographical notes: Suresh Ponnan graduated in Electronics and Communication Engineering, from Anna University in 2008, Master's in Embedded System Technologies from Anna University of Technology and doctoral degree from Anna University in 2014. He is an IEEE senior member and associated with many technical societies. He worked in various institutions over 14 years, designated in various positions, currently working as a Professor and Dean – International Relations in Veltech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, India. His research interests are in the field of artificial intelligence, autonomous systems, embedded systems, reconfigurable computing, silicon photonics and system on chip. He has published more than 100 research articles and collaborated with international professors from various countries.

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1 Introduction

As computer hardware costs decrease and software complexity rises, artificial intelligence (AI) and simulation are increasingly overlapping. AI programming methodologies provide for more realistic and resilient simulation models, as well as assisting the user in the development, execution, and interpretation of simulation experiments. Expert systems may use simulation methods to reason about complicated models that vary over time or include interacting stochastic components. This article covers the fundamentals of AI and the predicted advantages in each industry over the next ten years.

AI is a simulation in which a model is used to simulate human intelligence or knowledge. The thinking, learning, perception, planning, language understanding, problem-solving and decision-making abilities of an AI-based simulation model are often mimicked. The computational iterative system paradigm and the computational activity paradigm have lately been used to re-evaluate modelling and simulation theory. The computational iterative system paradigm allows for the abstract modelling of input/output systems, which are then explicitly revised until their computational processes are discovered via AI.

Furthermore, the incorporation of AI-related capabilities into different computing devices using conventional processors implies that these traditional processor classes are developing to the point where they are no longer distinguishable. Electronics Industry in the World of Tariffs & Trade reports that designers of AI-enabled systems are increasingly employing highly integrated heterogeneous processing solutions, such as application-specific integrated circuits (ASICs) and system-on-chip (SoC) solutions.

2 Research findings and discussion

Recent advancements in the IoT have resulted in an explosion of networked devices, enabling a wide range of smart applications. Machine/deep learning is provided with the essential skills of DL in IoT related smart applications since IoT devices generate a large number of data that requires additional intellectual processing and data analysis.

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Between the uncontrolled rectifier and the load, the positive output super lift type elementary converter is employed as a PFC architecture in this chapter. When an AC DC converter is subjected to load and line variations, the power quality indices will change. Fixed frequency control is combined with a tuned fractional order proportional integral derivative (FOPID) controller using modified particle swarm optimisation (PSO). This technique improves power quality while also allowing an AC DC converter to quickly adjust for load and line changes. Extensive simulation is carried out in the MATLAB/Simulink environment. The frequency of switching is 50 kHz.

Due to the ever-increasing number of cars on the road, traffic management has become a serious issue in every nation. With this improvement, it might be difficult to maintain track of automobiles for traffic surveillance and law enforcement purposes. This research focused on vehicle detection and classification (VDC), which is often utilised in applications such as traffic forecast, future road infrastructure need projection, automated parking and security enforcement. This research will help researchers choose relevant technology for VDC.

Technology is progressing on the opposite side of the exponential explosion of data. Big data refers to the collection of information from multiple sources and in various formats. It consists of a combination of structured, unstructured, and semistructured data produced in real time by various devices. This information comes in a variety of formats and is gathered from a variety of sources at the same time. As a result of the massive quantity of data collected, many types of forecasts might be useful in making judgements.

This chapter illustrates how SDN's control layer is endangered to LFA. While the proposed approach can appear suitable on the surface, some weaknesses and anomalies are discovered when deliberated deeper. This chapter, were point out these anomalies and the limitations of those anomalies by applying two machine learning algorithms, namely ANN_MLP and random forest to correctly classifying the virulent traffic during congestion We carry out experiments on Mininet network emulator and use the WEKA tool to assess the metrics by utilising the available datasets. The results exhibit that random forest can virulent traffic with higher accuracy and mollify them effectively during congestion.

The voltage security categorisation using adaptive machine learning. A decision tree is used to do an online probabilistic evaluation of voltage security, which is updated on a regular basis. The benefit of fuzzified decision tree support is that it allows for a more accurate categorisation of voltage security in future samples. Using the continuing power flow approach, offline learning datasets are created for each N 1 contingency circumstance. The maximum load ability margins are determined using the continuing power flow approach to create security classes. On the IEEE 30 bus system, the suggested approach is tested. For line outage no. 5 in the IEEE 30 bus system, classification accuracy improved from 88% to 100%, and for line outages nos. 51 and 172 in the IEEE 118 bus system, classification accuracy improved from 88% to 100%. The outcome demonstrates how online choices may be classified quickly and accurately. This demonstrates the validity and applicability of the suggested strategy for energy management system online control choices.

Ambient assisted living (AAL) systems include two major components: smart home and smart health. The primary goal of AAL is to help older persons be independent in their chosen surroundings for longer periods of time. It is possible that a sizable portion of the older population is not just concerned with comfort of life. In order to build a smart healthcare system, the work described here integrates the user's viewpoint. The suggested method is tested on a variety of datasets, including sensor data without visual input, sensor data with visual input, and sensor data with human emotion. To forecast personal health, several deep learning algorithms are used.