

Summary

"Information domain @intelligent networks and smart communications"

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In this book, we discuss the new trends for improvement the intelligent tools, and the structure, characteristics and applications of neural networks that are increasingly used in the business, security system, media and games. These networks are the further development of advanced technologies such as machine learning and deep learning, AI and smart infrastructures. The neural network technologies have a big potential for solving a variety complex problems and applications in the engineering science, finance, and market analysis. According to website of "Scientific American" artificial neural networks are viable models for a wide variety of tasks, including pattern classification, speech synthesis and recognition, adaptive interfaces between humans and complex physical systems, function approximation, image compression, forecasting and prediction, and nonlinear system modeling. This book tries to explain what are the connections between information, big data, machine learning, M2M communications, neural networks and AI. Marvin Minsky define the artificial intelligence as the field of research concerned with making machines do things that people consider requiring intelligence. Artificial neural networks (ANNs) are some models directly inspired by biological neural networks. They are capable of modeling and processing nonlinear relationships between inputs and outputs in parallel. The related algorithms are part of the broader field of machine learning, and can be used in many applications as discussed. Neural networks also are a set of algorithms, modeled simalarly to the human brain, that are designed to recognize patterns. According of the publications in *MIT Technology Review* with massive amounts of computer power, machines can now recognize objects and translate speech in real time. Artificial intelligence is finally getting smart. In this book we also discuss the role of quantum computer technologies that lead both to the emergence of new elements in the information domain as well as to further improvement of the communication methods, and a quantum information theory is developed from a scientific point of view. Quantum information theory is more about Von Neumann's interpretation and approaches to measuring entropy, whereas classical information theory deals mainly with the explanations and use of Shannon entropy. In the last five years we can discovery development of the new networks technology and some aspects of these are discussed in the book as: smart networks; networks based on machine learning; M2M network; network using deep learning; neural network; semantic web /knowledge representation; intelligent networks and network connected to linked data.

The basic parts of the the book are:

Information and knowledge transfer

Smart systems and information networks

Intelligent networks – challenges and tendencies

We also analyse the following very important topics related to smart technology, and intelligent systems: conversation in the interactive space; artificial intelligence, big data and analytical techniques, mobile technology and some aspects of communication problems in the 21st century.