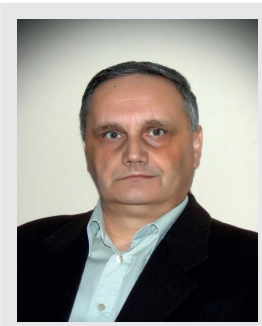
Foreword about Professor Radu Arsinte as a member of Editorial Board of "Advances in Electrical and Electronic Engineering" journal and the Professor at the Communications Department, Technical University of Cluj-Napoca:



Radu Arsinte

Radu Arsinte was born in Borca, county of Neamt, Romania. In 1983 he graduated the Polytechnic Institute of Cluj-Napoca (now renamed in Technical University of Cluj-Napoca), Romania and was granted the Bachelor's degree of engineer, in the field of Electronics and Telecommunications. Afterwards, he was employed for 2 years in an industrial company, working to develop technologies in data acquisition and oil fields surveillance. He began his research career in 1985, while working for the National Institute of Computer Research, Cluj-Napoca Branch. It was during this time that he brought contributions in personal and home computer development, both in hardware and software. Later, as Project manager, he developed devices and applications in image processing and communications, and distributed data acquisition. He was one of the pioneers of Digital Signal Processors (DSP) promotion in his country. In 1997, he was granted the Ph.D. degree in Electronics and Telecommunications by the Technical University of Cluj-Napoca. In 1999, he began an academic career in the same university. Radu Arsinte was an Associate Professor since 2001 and a Professor since 2006. His most relevant research fields are image processing, digital signal processing, Digital television (DVB), medical devices and systems, Media processors. Professor Arsinte published 6 books and other didactical manuals, over 80 scientific papers, and one technical patent, as co-author. He took part in the development of over 30 research contracts, as general manager for most of them. Professor Arsinte is member in a series of professional or scientific associations, such as IEEE - Institute of Electrical and Electronic Engineers, ACM - Association of Computing Machinery, Romanian National Society for Medical Engineering and Biological Technology.

Dear readers,

Introduction

In modern science, scientific journals are an ideal environment to exchange ideas and to cooperate. They mainly publish two types of articles. Part of these articles promote new algorithms and methods in areas considered to have already established solutions. The second type of articles present solutions and technologies that allow a qualitative and quantitative leap in solving problems by improving the technical devices and the experimental method used. At this moment, one question is raised concerning technical publications: are the papers with strong algorithmic support, considered to be more "scientific", equally important for the progress of the domain as the papers describing new experimental techniques?

Algorithm

A rigorous mathematical definition of the notion of algorithm is impossible without introducing other notions. Therefore, we will try to describe the algorithm concept and we will say that: an algorithm is a succession of processes necessary to solve a problem. An algorithm is a finite sentence, with each sentence specifying a particular calculation rule to solve the problem. In general terms, an algorithm is a step-by-step method of solving the problem. A problem is determined by the input data and a statement that specifies the relationship between them and the solution. Starting from the input data, the algorithm will describe all the processing steps necessary to arrive at the problem solution.

However, a good algorithm is not always a solution. For example, numerical spectrum estimation was possible many years ago, as a mathematical algorithm. Performing the spectral analysis in real time was an impossible target for the computers existent at that time. This fact has lead to the possibility to find alternative solutions (algorithms) to overcome the problem. Fast algorithms are the provisory response to the problem. But the real solution is brought by the development of Digital Signal Processors, capable of real-time analysis. Consequently, the technology can be the real answer to most problems.

In the last years, Driver Assistance Systems, helping the human driver to drive the car are more and more popular. Autonomous cars are based on Artificial Intelligence (AI) methods and algorithms, requiring new approaches in car networking concepts. At this point, the lack of a new technology could determine a dead end. Again, the technology brought the solution, networks fast enough and flexible to be a solution.

Technology

For example, we can take the new 5G communications technology as representative technology. The world, as we know it, could change due to the development of the technology that will connect everything that surrounds us. The 5G era follows where the internet will be faster and less resource intensive.

With the new 5G technology, the volume of data transmitted will be even 1,000 times larger, and networked devices up to 100 times more. In addition, the data processing speed will be much higher and the latency reduced, that is, the time that passes from applying the command and the response of the device. For example, for 4G technology the response time is 50 milliseconds, while for 5G technology it is one millisecond.

The combination of speed and fast response will make the technology useable to its true capacity. Doctors will operate patients that are hundreds or even thousands miles away. They will use virtual reality helmets and special gloves which will give them the feeling of touching the patient. And without a real-time connection, all of these would not be possible.The same new technology will also be used for cars that will become 100 % autonomous.

Cars will be connected to each other and will be able to communicate position, speed, infrastructure and nearby vehicle data. At the same time, technology will enable pedestrians and cyclists to transmit information from installed mobile phone applications to prevent accidents. This simple example shows that technology is sometimes the answer to most challenges in technical and scientific development. I wish to all the Journal members of the scientific and editorial staff and to all possible contributors all the needed success to bring the Journal to the next level of quality and recognition.