University of Cyprus
School of Engineering

Department of Electrical and Computer Engineering

Department of Electrical and Computer Engineering

Stelios Timotheou

Title: Random Neural Network

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Room KENTP-E002, Old Campus

University of Cyprus

Abstract:

The random neural network (RNN) is a recurrent neural network model inspired by the spiking behaviour of biological neuronal networks. Contrary to most artificial neural network models, neurons in the RNN interact by probabilistically exchanging excitatory and inhibitory spiking signals. The model is described by analytical equations, has a low complexity supervised learning algorithm and is a universal approximator for bounded continuous functions. RNN has found applications in a variety of areas including pattern recognition, classification, image processing, combinatorial optimization and communication systems. RNN is also an excellent modelling tool as it can capture the interactions of entities in various stochastic complex systems such as queuing networks, gene regulatory networks and chemical interaction networks. This talk is an overview of the theory, extension models, learning algorithms and applications of RNN.

Biography:

Stelios Timotheou is a Visiting Lecturer at the Department of Electrical and Computer Engineering at the University of Cyprus. He holds a five-year degree (first-class honors) in Electrical and Computer Engineering from the National Technical University of Athens, Greece, as well as an MSc (Distinction) in Communications and Signal Processing and a PhD from the Department of Electrical and Electronic Engineering of Imperial College London, UK. Previously, he was a Research Fellow at the Computer Laboratory, University of Cambridge, working as part of the INTERNET project (INTelligent Energy awaRe NETworks) for the reduction of the energy consumption of ICT systems. His research focuses on stochastic and mathematical modeling of system-wide problems, as well as the development of optimization and machine learning techniques for their efficient solution. Application areas of his work include neural networks, computer and communication systems, and disaster management.