

Editorial

From Pioneering Artificial Neural Networks to Deep Learning and Beyond

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International Journal of Neural Systems (IJNS) is a leading journal in the field of Computer Science and Artificial Intelligence (AI) with a focus on information processing in natural and artificial neural systems. It was created in 1989 and, in the last 15 years, thanks to the intense and indefatigable work of its *Editor-in-Chief* (EiC) Professor Hojjat Adeli, has grown significantly reaching today a leading worldwide position among journals of the same scientific area. I am very pleased and honored to be invited by Professor Hojjat Adeli to write this Editorial for the 30th Anniversary of the International Journal of Neural Systems. I have worked as a computer scientist for 30 years (I started my research activity just in the year in which the IJNS was born) on Artificial Vision and AI topics, among which I design and develop several algorithms and models of advanced artificial neural networks (ANNs) like Neural Trees (NTs) and Hierarchical Tree Self-Organizing Maps (HTSOMs). Let me explain now the title of this editorial: *From Pioneering Artificial Neural Networks to Deep Learning and Beyond*.

IJNS has a long tradition of publishing high-quality papers reporting new computational AI techniques starting from pioneering advanced ANNs approaches such as multi-layer perceptron (MLP) with weight-elimination,¹ unsupervised learning,² pruning procedures for increasing ANN generalization capability,³ evolutionary artificial neural networks (EANNs)⁴ to the recent and innovative *Deep Learning* (DL) approaches such as deep convolutional neural networks (DCNN),⁵ neural forests (NF),⁶ long short-term memory networks (LSTM),⁷ ensemble of deep networks (EDN)⁸ and spiking neural P systems.⁹ As far as spiking neural networks are concerned, IJNS has published some pioneer papers containing both theoretical and application aspects.¹⁰ Neural systems described in IJNS are applied to several application domains, ranging from the neural disease diagnosis to EEG-based brain-computer interface, from epilepsy convulsion recognition to diagnosis systems for Alzheimer's with visual support, from event/anomaly detection to behavioral activity recognition in video streams.

Multidisciplinarity

Multidisciplinary is one of the most important pillars of the modern science. Integration of different methods coming from different areas allows to reach more original and efficient solutions to complex problems. The capability of transforming a complex problem into a simpler one is often possible by transforming the solution search space into a different space where the result can be found in a more efficient and easier way. Methods coming from different disciplines allow often to find such solutions, like *bio-inspired systems* suggest, but most of

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the existing journals in the field of Computer Science are limited to specific domain and theoretical formulation. IJNS is a journal that considers multidisciplinary (medicine, computer science, system modeling, physiology, etc.) as an essential element in a science journal of the 21st century.

Ranking

IJNS is one of the top journals in the fields of Computer Science, AI, Engineering, and Neuroscience. In 2019, the IJNS achieved an impact factor of 5.604. Observing the results of the Journal Citation Reports and comparing the IJNS performance with other journals in the field of Computer Science and AI, it is easy to notice that the IJNS is one of the top-impactful journals in the past decade. Thanks to Professor Adeli and to the Editorial Advisory Board of the IJNS for this exceptional performance that takes on an even higher value when you consider that the IJNS does not use the support of any scientific society.

Review Process

The IJNS review process is based on a minimum of five-review standard (in some cases even 10 reviewers can be assigned to a single paper). In my knowledge, very few International Journals have a review process so rigorous. Only in a few cases, one of my submitted papers has received more than three reviews, and only in very particular cases five reviews (e.g., a re-submitted paper for a second review round submitted by the Editor also to additional reviewers). At the same time, the review/decision process for IJNS, often iterated several times, is very fast guided directly by the EiC, who reminds the reviewers when the deadline approaches and therefore avoiding that some papers remained locked in a stand-off. On average the review process is completed within 4 or 5 weeks and the response is sent to the authors accordingly. Moreover, the submission procedure requiring a list of most active and leading researchers in the topic covered by the submitted paper is very important to optimize the review process and the guarantee the excellence of the process.

As an author of several papers published in the last few years in the IJNS, I have always found precise and constructive reviews, suggesting good ways to correct errors and increase the scientific quality of the paper. As a reviewer, I have found the review sheet very useful because it contains specific points focalized on the originality of the paper, on the statistical analysis of the results and on the quality of the experimental protocol. Moreover, I consider Professor Adeli a fundamental guide, who helps and directs me to maintain high standards of the review process.

Editor in Chief

In the past decade, the IJNS has reached a very high scientific quality thanks to the continuous and intense work of its EiC, Professor Hojjat Adeli, who applies a rigorous selection of the high standards for the reviewing processes and a continuous upgrade of the main topics of the papers according to the latest trends in both Computer Science and AI. The pre-review of the submitted papers is carried out by the EiC, who checks the originality and quality of the proposed research. In this way, the review process is rapid without losing its high scientific and technological value.

Being part of the IJNS network as an author and a reviewer is a source of great pride to me and also a great experience for increasing the quality of my research activity. I would like to congratulate both the Editor-in-Chief, Professor Hojjat Adeli, and the Editorial Advisory Board on the journal's 30th anniversary and wish him to continue his great job with new ideas and visions which are fundamental for researchers to achieve important goals in the scientific field.

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