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Editorial
The Evolution and Success of an Excellent Transdisciplinary Journal

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I am very pleased and honored to write this Editorial for the 30th Anniversary of the *International Journal of Neural Systems* (IJNS). I am a computer scientist working on Theoretical Computer Science topics, among which some models were neural networks. When some years ago I received for the first time a request for writing a review for a paper submitted to IJNS, I did not know this journal. So, I looked for information about it, and I discovered that it is a multidisciplinary journal in which you can find a great variety of papers, from the definition of new models of Artificial Neural Networks to the application of Machine Learning techniques to detect epileptic seizures. Imagine also my surprise when I saw that the Editor-in-Chief, Prof. Hojjat Adeli, is a renowned civil engineer! (At that time, I could not imagine that many surprises would have come from this side: see below to get an idea about the eclectic contributions of Prof. Adeli).

Thus, albeit my mentors in the past always suggesting to me to focus only on Computer Science topics to develop my career, I decided to follow my instinct and I accepted to write the report. At the time, this decision was mainly due to my interest in the topic of the paper I was asked to review: spiking neural networks. I am now really happy about the choice I have made. For years, I have written a number of reviews for IJNS, and I have learned a lot about applications in different applicative domains. Now, I fully appreciate the quality of the journal as well as the quality of Prof. Adeli as an editor, as a researcher, and — last but not the least — as a human being.

But, let's go in order. The high quality of the journal was soon apparent to me, even if at the time I was not aware of the details about its impressive performance: apart from the very high bibliometric indexes that are under everybody's eyes, IJNS is one of the most prominent among the top journals in the fields of Computer Science, Artificial Intelligence (AI), Engineering, and Neuroscience. According to Journal Citation Reports, in 2015, IJNS was ranked as the 2nd in a list of 123 journals in the field of Computer Science and AI. The scope of this journal is to cover issues related to information processing in natural and artificial neural systems, notably Machine Learning, Computational Neuroscience and Neurology. This is one of the reasons why IJNS is so successful: these topics are considered very relevant in modern science, in particular, in fields related to the broadly perceived AI. Another reason behind the success of IJNS is that the topics and issues covered by the papers published slightly change over time, following — and sometimes foreseeing — the interests of the scientific community. In this way, the scope and aims of the journal are always up to date, and instead of having a journal

that perishes when the topics covered become outdated, we have an always young, active and dynamic journal. What I liked since the beginning of my involvement, is the admixture of two aspects:

- mathematical models of biological neurons, and the investigation of their properties, with the aim of understanding how biological neural networks work — as well as why they sometimes fail to work properly, such as it happens with epilepsy seizures;
- the relationship between the above-mentioned mathematical models and several variants of Artificial Neural Networks, such as for example Spiking Neural Networks. In this case, some (simplified) models of biological networks are used just like ANNs, to see how they learn difficult topics and what are the differences in the behavior and in the learning process between them and traditional ANNs.

This is just an example of the *transdisciplinary* soul of IJNS, by which topics coming from different fields of knowledge inspire ideas that cross-fertilize each other. The fact that among the topics covered by the journal we can find Neural Networks, Models of Computation, Optimization Methods, Fuzzy Systems, Medical Signal Processing, and Data Science acts as a multiplier for possible combinations and cross-fertilizations. Not to speak about the applications, that vary from optimization problems to Brain–Computer Interfaces (BCIs), to the analysis of electroencephalograms (EEGs).

Another key behind the success of IJNS is the reviewing process. Since when Prof. Hojjat Adeli took over as the Editor-in-Chief in 2005, he has meticulously and consistently invited a large number of experts in the above-mentioned fields, asking them to become *Conscientious Reviewers* (a term invented by him). For sure, the fact that he deals in person with every step of papers' processing, from submission to acceptance for publication (or rejection), gives him a global view that is fundamental to keep the whole process under control. I have to say that I can only imagine the amount of work and effort that makes possible this process. Especially, due to the fact that the journal guarantees a short publication time: reviews are usually made in two weeks (it was four weeks some years ago), and in some cases, the entire process is completed in four–five weeks. However, speed is not the driving force: every step in the process is performed with a solid rule in mind: quality first. Each paper undergoes the rigorous scrutiny of at least five reviewers, that sometimes become 9 or 10. The combination of high quality and short publication time, and the focus on timely and hot topics, have greatly contributed to the success of the journal.

But above all, the success of IJNS is mainly due to the *human* force that is working behind it: its Editor-in-Chief, Prof. Hojjat Adeli. He has relentlessly worked for the success of the journal through many proper choices, among which the Editorial Board, the scope and aims, the quality of the peer review process. All this is part of Prof. Adeli's vision. However, as somebody else has observed, a vision is nothing without the sheer ability to implement it; and Prof. Adeli has this ability, as well as the strength to pursue it.

At this point, one may ask *who* is Hojjat Adeli. I have no space to report his full biography and a list of his achievements, so let me just point out what impressed me. He earned a Ph.D. in Civil Engineering from Stanford University in 1976, at the age of 26. However, his curious mind did not allow him to stay in one place for too long and thus his interests expanded quickly every few years to Computer Science, AI, Machine Learning, Computational Intelligence, Optimization, Biomedical Engineering, Neuroscience, and Neurology among others. Always performing high-level research, he has made seminal contributions to several fields, including Computer Science, AI, Machine Learning, Computational Neuroscience, and Neurology. For example, working with his research collaborators, he has developed a number of new Machine Learning algorithms such as a new training technique for Multilayer Neural Networks,[1] the Enhanced Probabilistic Neural Network model,[2] and more recently the Neural Dynamic Classification Algorithm,[3] the Dynamic Ensemble Learning Algorithm,[4] and the Finite Element Machine for fast learning.[5] Overall, he has published more than 600 scientific papers. The eclectic nature of his research is astounding. He is the author of pioneering papers (and a book[6]) of Computational Intelligence, where Neural Networks, Genetic Algorithms and Fuzzy Logic are used to solve hard practical problems. He has studied the so-called *Brain Engineering*, and he has introduced through IJNS a new discipline called *Computational Neurology*. He also found the time to write or co-author 16 books. He is among the top 1% of most cited authors on ISI Web of Science. In 2010, ASCE Journal of Leadership and Management in Engineering devoted

an article to the life and career achievements of Prof. Adeli, and presented him as an *Engineering Legend*.[7] Prof. Adeli has also been awarded with a number of scientific prizes for the excellence of his work, and with several honorary Doctorates as well. And I am happy to say that he has established strong relationships with Italy, since long time ago: he was invited to present keynote lectures at international conferences held in Bergamo, in 1989, and Reggio Calabria, in 2003 and 2014. He was awarded the Eduardo Renato Caianiello Award for Excellence in Scientific Research in June 2014. This is a prestigious prize, established in 1997: the 2001 recipient was the Swedish neurophysiologist Torsten Wiesel, who received the 1981 Nobel Prize in Medicine; the 2003 recipient was the American biologist Gerald M. Edelman, who received the 1972 Nobel Prize in Medicine. Another relationship between Prof. Adeli and Italy was established in June 2019, when he was awarded an Honorary Doctorate from Mediterranean University of Reggio Calabria. From this quick overview, the reader may see how Prof. Adeli's great achievements in different areas of Science and Technology allow him to have a broad — but also deep — view of the topics treated in IJNS, and the knowledge and experience necessary to take wise decisions.

Last but not the least, I would like to point out that Hojjat Adeli is also a very kind person, which is not so common among highly effective scientists. Not only every request for a review starts with "Dear Friends/Colleagues. . ."; Hojjat is always ready to answer to personal notes, and share personal events, such as for example a photo of his newborn grandson. . . At that time I did not know it, but when I filled in the form to become a *Conscientious Reviewer* I also entered into a community, or perhaps I should say a *family*.

I conclude by saying that the scientific community can be proud of the International Journal of Neural Systems, and we can only be grateful, and appreciate so much, what Prof. Hojjat Adeli has done for the journal, that is, for all of us. It has been my honor to contribute to IJNS in the last several years and write in this Editorial my observations. Wishing a Happy Birthday to IJNS, I send my sincere congratulations to the Editor-in-Chief, Prof. Hojjat Adeli, for this successful milestone. I am sure that in the years to come, he will continue this great job and he will be able to devise and implement many new visions and ideas.

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