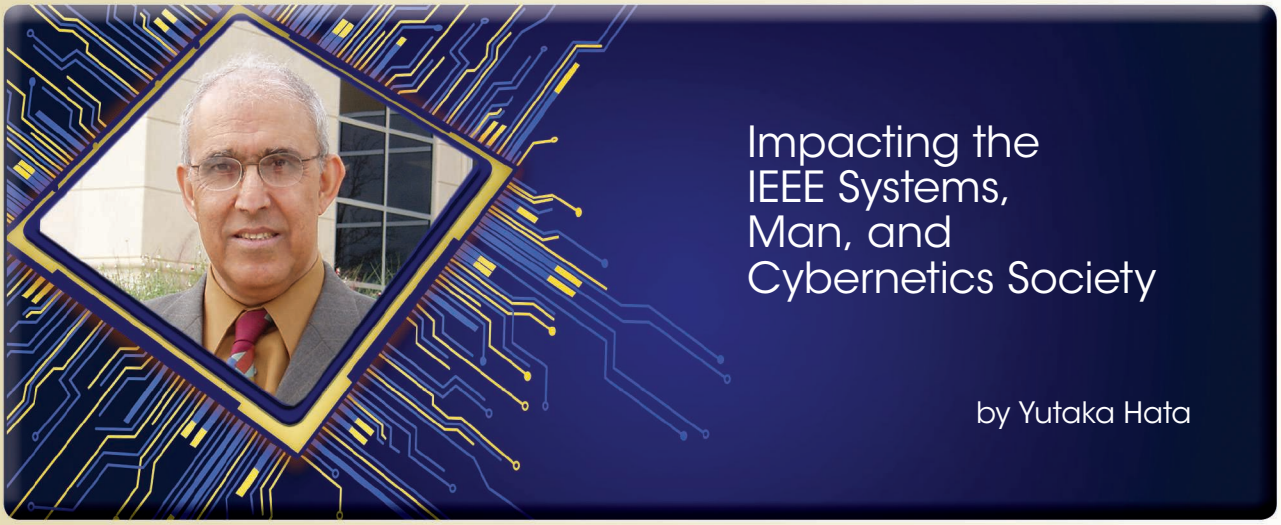
The Accomplishments of Mo Jamshidi



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Prof. Mo Jamshidi is a globally renowned leader not only in the IEEE Systems, Man, and Cybernetics Society (SMCS) but also the engineering world. He conceptualized and developed the system of systems engineering (SoSE). This scheme is now widely acknowledged and extends to the fields of engineering, economics, science, social issues, and medicine. I have known him since 2000, and it is my great honor and privilege to describe the impact he has had, as well as the accomplishments he has achieved, in his role in the IEEE and the international engineering field.

My Impressions of Prof. Jamshidi

Prof. Jamshidi, the Lutcher Brown Endowed Chair and professor in the Department of Electrical and Computer Engineering at the University of Texas at San Antonio, is a very well-known scholar, researcher, and educator. I met him at the World Automation Congress (WAC) 2000 in Maui, Hawaii, when he was the general chair of WAC. It did not take me long to realize he was a distinguished and great international leader in the field of engineering. His gentle, kind, and warm demeanor toward the attendees was easily discernible. In WAC 2000, all Japanese participants belonged to my group, and we received his cordial welcome and wonderful suggestions on our research. Since then, I have retained great respect and admiration for his work. I strongly believe that he inspired my role at subsequent WAC symposia. As a result, I served as general chair of the International Forum on Multimedia and Image Processing of the WAC in 2002 (Florida), 2004 (Spain), 2006 (Hungary), 2008 (Hawaii), 2010 (Japan), and 2012 (Mexico). After WAC 2012, I served as the general cochair of WAC 2014 (Hawaii) and WAC 2016 (Puerto Rico). WAC 2020 will be held in Taipei, Taiwan.

WAC consists of the following five tracks or symposia:

- International Symposium on Robotics and Applications
- International Symposium on Intelligent Automation and Control
- International Symposium on Manufacturing and Systems Engineering
- International Symposium on Soft Computing for Industry
- International Forum on Multimedia and Image Processing.

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It was at WAC 2010 in Kobe, Japan, that I had the opportunity to fully appreciate Prof. Jamshidi's hard work for WAC. While I was involved in the organization of the event and obtained several grants from Japanese foundations and companies to support the conference, Prof. Jamshidi handled all other aspects such as paper submissions, review control, program schedule, and the intricate planning for the reception and banquet. He has been doing these jobs every two years since 1986, and we will continue to work together since WAC is a biennial conference. With his inexhaustible energy and zest for work, one cannot help but develop great admiration and affection for Prof. Jamshidi. He is an invaluable asset for WAC committees.

Impact and Accomplishments in the IEEE

Prof. Jamshidi has made numerous contributions to the science and technology of large-scale complex systems. He developed many new approaches to control system design. It is little surprise that he was elevated to the grade of IEEE Fellow in 1989 for his contributions to the theory and applications of large-scale systems and control system education.

Prof. Jamshidi has served the systems and control community in three Societies in the IEEE:

1) IEEE Control Systems Society
2) IEEE Robotics and Automation Society
3) SMCS.

He is the founding editor of *IEEE Control Systems Magazine* and was the vice president for Conference and Meetings of the SMCS. He is also the founding editor-in-chief of *IEEE Systems Journal*. At SMCS, he organized the 2005 IEEE International Conference on Systems, Man, and Cybernetics in Hawaii as the general chair. In his welcome message, he stated:

> We hope that this conference will render not only a beautiful venue and scenery, but provide you a very rewarding and innovative technical meeting where new interests in Systems Engineering with emphasis on our conference theme—System of Systems Engineering—are discussed. IEEE SMCS has always been a leader in systems engineering among all fields of engineering, be it electrical, mechanical, aerospace, and so on. We hope that the contribution of the IEEE SMCS and its thousands of members would continue to make a difference in systems engineering, cybernetics and human–machine systems. [1].

This message gives us deep insights about his passion for SoSE as he ushered in a new era of systems engineering in the IEEE and thus pioneered the SoSE concept. He followed this up by organizing the first SoSE conference in the form of the 2006 IEEE/SMC International Conference on System of Systems Engineering. He continued to organize further iterations of the conference for the years 2010–2014. This conference was called the *System of Systems Engineering Conference* from 2015 to 2017, but it has now been renamed (effective with the 13th conference in 2018) the *Annual Conference on System of Systems Engineering*.

Impact and Accomplishments in Other Forums

In large-scale system engineering, Prof. Jamshidi's first publication was *Large-Scale Systems Modeling and Control* (North-Holland, 1983). This book, known as the "First Textbook," was translated into five languages and used in more than 55 nations. He then published two more acclaimed books: *Large-Scale Systems: Modeling, Control, and Fuzzy Logic* (Prentice Hall, 1996) and (with Dr. Manu Malek-Zavarei) *Time-Delay Systems: Analysis, Optimization and Applications* (Elsevier Science, 1987). These books are highly cited in Google Scholar. Prof. Jamshidi

Prof. Jamshidi (left) and Yutaka Hata at WAC 2006.

Prof. Yamakawa (left) and Prof. Jamshidi (center) with their spouses at WAC 2006.

Participants enjoyed the hospitality at WAC 2008 (from left): Mrs. and Prof. Zadeh, Yutaka Hata, and Prof. Jamshidi.

Prof. Jamshidi (top row, second from left) joins the plenary speakers at WAC2010 (Japan), including (front row, from left): Prof. T. Fukuda (2019 president-elect), Prof. T. Yanagida, Prof. Yamakawa (top row, first from right), and Yutaka Hata (front row, first from right).

went on to publish more than 50 books and 30 book chapters. Among those, *System of Systems Engineering: Principles and Applications* [2] is well known. In that book, he wrote:

> Recently, there has been a growing interest in a class of complex systems whose constituents are themselves complex. Performance optimization, robustness, and reliability among an emerging group of heterogeneous systems to realize a common goal has become the focus of various applications including military, security, aerospace, space, manufacturing, service industry, environmental systems, and disaster management, to name a few. There is an increasing interest in achieving synergy between these independent systems to achieve the desired overall system performance. In the literature, researchers have addressed the issue of coordination and interoperability in a system of systems (SoS). SoS technology is believed to more effectively implement and analyze large, complex, independent, and heterogeneous systems working (or made to work) cooperatively. The main thrust behind the desire to view the systems as an SoS is to obtain higher capabilities and performance than would be possible with a traditional system view. The SoS concept presents a high-level viewpoint and explains the interactions between each of the independent systems. However, the SoS concept is still at its developing stages.

Currently, we are experiencing the real reach of SoS, such as in autonomous cars, industrial, medical and personal robots, and artificial intelligence and Internet of Things systems for lifestyle, health care, and decision making. We must view the current systems as an SoS to obtain higher capabilities and performance than would be possible with traditional systems. Prof. Jamshidi's vision is not only promising but progressive as well.

On another note, I am impressed by Prof. Jamshidid's personal quest for quality journals. He is a volunteer extraordinaire, having founded more than five of them, with the most famous being the international journals *Intelligent Automation & Soft Computing*, with the late Lotfi A. Zadeh as honorary editor, and *Computers & Electrical Engineering*. His energy and passion are unlimited in these areas as well. The holistic impact of Prof. Jasmshidi on today's society is immeasurable, and his current and future work will undoubtedly continue to wield a vast influence on the field.

About the Author

Yutaka Hata (hata@ieee.org) earned his B.E., M.E., and Ph.D. degrees from the Himeji Institute of Technology, Kobe, Japan, in 1984, 1986, and 1989, respectively. He spent one year (1995–1996) at the University of California, Berkeley, and is currently professor of the Graduate School of Simulation Studies, University of Hyogo, Kobe, Japan. His research interests include medical and fuzzy systems. He has received 15 international awards, including the Franklin V. Taylor Best Paper Award (IEEE SMC 2009). He is an associate editor of *IEEE Transactions on Systems, Man, and Cybernetics: Systems* and a regional editor of *Intelligent Automation and Soft Computing*. He is a Fellow of the IEEE.

References

[1] M. Jamshidi, "Message from chairs," *IEEE Proc. Int. Conf. Systems, Man and Cybernetics 2005*. [CD-ROM].

[2] M. Jamshidi, *Systems of Systems Engineering: Principles and Applications*. Boca Raton, FL: CRC, Nov. 6, 2008.

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