Peter Luh, the Father of Automation

By Frank Park , Nukula Viswanadham, Ken Goldberg , Michael Wang , Yu Sun , MengChu Zhou , Bengt Lennartson , and Fan-Tien Cheng

It was with great sadness and shock that we received the news that our dear friend and colleague, Prof. Peter Luh, had passed away on 28 November 2022, only 71 years old. His passing was completely unexpected—some of us had even received an e-mail from him the same day he left us, which, as so many times before, included constructive and encouraging feedback. We call Peter *The Father of Automation* because of his pioneering contributions to the field of automation research; among other achievements and contributions, Peter was the cofounder and first editor-in-chief of the *IEEE Transactions on Automation Science and Engineering* (*T-ASE*), a cofounder of the IEEE Conference on Automation Science and Engineering (CASE), and founding chair of the CASE Steering Committee. Peter was a great leader and an inspiring, engaged, and supportive mentor and role model.

Peter Luh was born in Taipei, Taiwan; he received his B.S. from National Taiwan University, his M.S. from the Massachusetts Institute of Technology, and his Ph.D. in applied mathematics from Harvard. In 1980, he joined the Department of Electrical and Computer Engineering at the University of Connecticut (UConn), where he worked for 41 years as a professor of electrical and systems engineering. During these years, Peter exerted a profound influence on automation research around the world; he received countless invitations to act as a keynote speaker, to chair workshops, and to assess universities' electrical engineering programs. In 2018, Peter was named a Board of Trustees Distinguished Professor, which is the highest academic honor UConn bestows.

Peter made especially important research contributions concerning the optimization of power systems, smart grids, smart buildings, and intelligent manufacturing. Many of his most cited articles focus on optimizing complex systems using Lagrangian relaxation.

Peter volunteered for numerous leadership positions, especially within the IEEE Robotics and Automation Society (RAS). In addition to his founding work and leadership roles with *T-ASE* and CASE, mentioned above, Peter served as editor-in-chief of the *IEEE Transactions on Robotics and Automation*, vice president of RAS Publication Activities, chair of the IEEE Technical Activities Board (TAB) Periodicals Committee—where he oversaw more than 190 journals and magazines—and chair of the IEEE TAB Periodicals Review and Advisory Committee. For his many research contributions and leadership roles, he received the 2013 RAS Pioneer Award, the 2017 George Saridis Leadership Award, and the 2019 *T-ASE* Best Paper Award.

Peter was a strategic and visionary leader; he constantly considered how to further develop and improve actions and plans, both for their quality and quantity. He promoted automation practice while maintaining high scientific standards. He initiated the "Note to Practitioners" section in *T-ASE* articles to justify the importance and practicality of the research.

Peter's dream was that automation would play a stronger role within RAS. At CASE 2021, he initiated an ad hoc committee on this topic, and after working with the leadership of RAS, the Administrative Committee (AdCom) agreed to establish a number of strategic positions to strengthen automation within RAS.

> **WE CALL PETER THE *FATHER OF AUTOMATION* BECAUSE OF HIS PIONEERING CONTRIBUTIONS TO THE FIELD OF AUTOMATION RESEARCH.**

FIGURE 1. Peter Luh, a giant in the field of automation research.

More recently, noting that "Machine learning (ML) is changing the world, and in particular the world of automation," at CASE 2022 in August in Mexico City, Mexico, Peter presented his latest research on integrating ML into the optimization of complex systems. Indeed, Peter had long been an important researcher and advocate on this topic; his most cited article (available at https://ieeexplore.ieee.org/document/5340640), published in 2009, is on wavelet neural networks applied to power systems, which advanced research on ML for automation.

Seeing Peter was always a great pleasure. It was an unforgettable experience to shake his hand and receive his warm smile. His encouraging feedback, whether in person or via e-mail, was so important. And with his remarkable capacity to work and dedication to the field, Peter often replied to e-mails and requests almost instantaneously.

Peter always found it important to support his colleagues. He devoted significant energy and countless hours to serving as a reviewer for various awards and IEEE Fellow nominations. And he particularly lent his support to the many young professionals in the automation community to help them progress in their careers. His deep engagement with his Ph.D. students is attested to in the many memories shared on his obituary at https://www.dignitymemorial.com/obituaries/alexandria-va/peter-luh-11038683. Peter also had a penchant for raising relevant and constructive questions at conferences and workshops. His remarkable intellect allowed him to quickly understand and offer feedback on research in many different fields. Indeed, Peter was a strong believer in giving back to the research community. Many of us became volunteers when he first reached out to us early in our careers. He led by example, working tirelessly and selflessly for the greater good of the community.

> **ABOVE ALL ELSE, PETER LOVED JESUS, HIS LORD AND SAVIOR.**

On a more personal note, together with his family, Peter loved to travel both domestically and abroad, and to attend UConn basketball games. He was also a terrific swimmer and an avid fan of anything with chocolate. Above all else, Peter loved Jesus, his Lord and Savior. As is mentioned in his obituary, every action, decision, and conversation was filtered through his faith. For over 40 years he was an active and supportive member of the UConn Chinese Bible Study group.

We are profoundly indebted to Peter for his deep support, engagement, and encouragement ever since the first IEEE CASE conference in Edmonton, Canada 2005. He had also promised to be the Award Chair for IEEE CASE 2023 in Auckland, New Zealand; his presence and his contributions this coming August will be greatly missed. IEEE CASE will never be the same without Peter's presence, but we will always remember him as a dear friend, and we promise to support his vision for a stronger automation presence within RAS and for increased research on ML for automation.

Peter is mourned by his wife Chwenhwa, his daughter Corene and son Adrian, as well as his four grandchildren, Sariah, Brinley, Lauren, and Lucas. We express our heartfelt and deepest condolences to them. The following is quoted from Peter's obituary (linked above), which also contains many moving and fascinating testimonies and photos:

Donations may be made in memory of Prof. Peter Luh to the "Prof. Peter Luh Fellowship for Graduate Student Support" at the University of Connecticut Foundation, Inc. Online donations may be made using the following link: https://www.foundation.uconn.edu/fund/professor-peter-luh-fellowship-for-graduate-student-support/

Alternatively, checks made payable to the UConn Foundation, Inc., should include the memo "Peter B. Luh Memorial," and can be mailed to:

The UConn Foundation, Inc.
Attn: Data Services
2390 Alumni Dr., Unit 3206
Storrs, CT 06269-3206

INDUSTRY ACTIVITIES *(continued from page 102)*

of standards; and entrepreneur/industry cluster support. The RAS IAB would like to know what figures and information would be of most use to you. We also invite you to contribute case studies of the success of category-creating robotics companies. We are working with the Canadian Robotics Network and the University of Toronto to collect and share these case studies. These will be published in the first RAS IAB Industry Report in 2023, where we intend to include case studies and snapshots of emerging robotics investment activity in certain sectors and provide comparisons between robotics investment and entrepreneurial levels around the world.