Jubilee Welcome: Celebrating 25 Years!

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What you read now was written, erased, rewritten, and re-erased several times before I decided how to start the introduction to the jubilee issue of *IT Professional*. Numerous iterations were considered before I selected the text worthy of being the introduction for the issue celebrating a 145-issue journey of such a dynamic magazine that, for a quarter of a century, has served as the steadfast companion to professionals, researchers, and enthusiasts navigating the ever-evolving landscape of IT. While I write these lines, together with the joy and pride of being at the steering wheel of the magazine, I also feel the weight of this momentous occasion and the obligation to reflect on the past achievements of this 25-year ride of publication history.

And what a remarkable ride this has been! *IT Professional* premiered with its January/February 1999 issue. The year 2000 problem that loomed large at the time was the focus of that first issue. Since then, the magazine has published more than 10,300 peer-reviewed papers, being at the forefront of delivering cutting-edge insights, groundbreaking research, and transformative ideas in the dynamic field of information technology. And it continues to chronicle emerging technologies that have had and continue to have a dramatic impact on how IT professionals—and, by extension, how all of us—live, work, and think.

To achieve this, you have to stand on the shoulders of giants. And this is exactly the case of *IT Professional*, which draws its strength primarily from the great editors in chief (EICs) who have led it with vision and remarkable insight. Starting with Wushow (Bill) Chou, the first EIC from 1999 to 2001, subsequent EICs have continued reflecting on the relationship between IT technology and the IT professional as well as society at large. Among them are many former inspirational EICs, such as Frank Ferrante (2002–2005), Arnold Bragg (2006–2009), Simon Liu (2010–2013), San Murugesan (2014–2017), and Irena Bojanova (2018–2021). And I should, of course, not forget the former president of the CS, Sorel Reisman, who has been a staunch supporter of *IT Professional* from the beginning. They have all channeled change, along with the associate editors of the magazine and the authors of articles, contributing to make *IT Professional* a respected IEEE magazine.

I feel that it is my duty to mention the top contributors over the years (I will use the stats since 2009), and I thank Jeffrey M. Voas (55), Phillip A. Laplante (50), Nir Kshetri (49), George F. Hurlburt (39), Sorel Reisman (35), George O. Strawn (35), Irena Bojanova (34), Stephen J. Andriole (34), Linda Wilbanks (34), Keith W. Miller (30), San Murugesan (28), Tom Costello (27), Seth Earley (24), Simon Liu (24), Jinan Fiaidhi (20), D. Richard Kuhn (19), J. Morris Chang (17), Sherali Zeadally (17), Joseph Williams (14), Maria R. Lee (14), Sunil Mithas (13), Timothy R. Weil (13), G. Reza Djavanshir (13), Wushow Chou (13), Sabah Mohammed (12), Linda S. L. Lai (10), and Wesley Chou (10).

But apart from the peer-reviewed technical articles involving hundreds of volunteer reviewers, *IT Professional* navigates safely, relying on its successful departments and columns, curated by loyal and dedicated chairs exposing novel ideas and insights about the future of IT. Of course, the current editors deserve great credit; they include Steve Andriole (Life in the C-Suite), Irena Bojanova (Cybersecurity), Amir Dabirian (IT Trends), Nir Kshetri (IT Economics), Tiziana Margaria (Formal Methods), and George Strawn (IT and Future Employment and Mastermind). Their oft-cited articles often lead the pack in popularity, and many appear in the CS's monthly *Edge* magazine.

The compilation of each issue involves the consideration of regular articles (and, for the special issues; the articles submitted and evaluated under the corresponding special issue call for papers); the columns and departments; and, of course, communication over social media. Here, the work of our associate EICs is what keeps the engine of *IT Professional* running. January 2024 finds the magazine with four highly skilled and diligent associate EICs who exhibit a remarkable dedication to their editorial roles: George Hurlburt for columns and departments, Tiziana Margaria for regular papers, Nir Kshetri for special issues, and Hassan Keshavarz for outreach and awards.

You might have noticed that I do not appear anywhere in the previous lists (though my contributions

IN THIS ISSUE

FEATURES

It is hard to comprehend all of the ever-accelerating advancements in IT over the past 25 years, much less the impact these advancements have had and will continue to have on IT professionals. As we celebrate the 25th anniversary of *IT Professional*, we both look retrospectively at all that has transpired and contemplate what is to come. To do so, we invited some old friends, including highly read *IT Professional* authors, some of whom even contributed to previous anniversary editions.

We start with some highly relevant future projections. Bresniker et al.[A1] examine the future of the IT professional in their provocative invited survey article, "What Gets You Hired Now Will Not Get You Hired Then." These authors call for adaptability, lifelong education, and the ability to harness data to the advantage of humankind. As 6G begins to take shape as an efficient and robust protocol, Tomkos et al.[A2] take a deep dive into the current state of 6G technology and propose some research initiatives needed to bring this emergent protocol to full fruition. Their invited article is "The 'X-factor' of 6G Networks: Optical Transport Empowering 6G Innovations." Agriculture has come a long way since the hunter–gatherer era. Fountas et al.[A3] examine the future of agricultural automation in their invited survey article, "Agriculture 5.0: Cutting-Edge Technologies, Trends, and Challenges." They conclude their forward-looking overview by acknowledging the need for building sustainability into future policies governing technology-enhanced agriculture.

COLUMNS AND DEPARTMENTS

Our special departments and columns both offer important retrospectives and look ahead.

Former IEEE Computer Society President Sorel Reisman kicks it off with a personal perspective on *IT Professional*'s foundations. His From the Editors contribution is "The Beginnings of *IT Professional*—A Personal Retrospective."[A4] Switching back to the future, new *IT Professional* Associate Editor-in-Chief and IT Economics Department Editor Nir Kshetri exposes value creation by the economic sector in his article, "Monetizing Quantum Computing."[A5] While quantum computing remains immature, Kshetri foresees its potential economic productivity. Always a favorite, mastermind George Strawn presents his invited survey article, "The Mastermind Column Wishes *IT Professional* a Happy 25th Anniversary."[A6] Here, he highlights the leading masterminds who set the stage for the past 25 years. In IT Trends, Hurlburt and Dabirian offer "Why IT Lessons Matter."[A7] They take the long view of the evolution of IT, culminating in the remarkable advancements over the past 25 years. This review builds a case for the urgency of greater emphasis on global IT education.

Next, Henry Schafer surveys "Will Algorithms Rule Us?"[A8] in his invited Software Technology article. He suggests specific accountability measures governing those responsible for algorithms. Switching to another emergent technology, Gregory Proven, writing in Formal Methods, looks ahead at "Formal Methods for Autonomous Vehicles."[A9] Returning to IT professionals in senior positions, Steve Andriole, writing in his Life in the C-Suite column, asks, "How Good Is the Team?"[A10] Finally, in her IT Security column, former *IT Professional* Editor in Chief Irena Bojanova presents "Comprehensive Labeling of Weakness and Vulnerability Datasets via Unambiguous Formal Bugs Framework Specifications."[A11] Here, she explains the formal Bugs Framework database, using an ontological approach to enhance software testing by exposing possible fault causation chains.

We commend these special survey articles for your early 2024 reading pleasure.

place me among the top contributors of the magazine) in the past years. There is a good reason for this since I want to share a personal statement, which, for me, weighs more than the number of my publications in the magazine. Reflecting on my history and involvement with *IT Professional*, I see a journey that began as a reader and evolved into an incredible odyssey of professional growth and contribution.

From the early days of eagerly flipping through its pages to the privilege of seeing my first article published (about 10 years ago), each step in this trajectory has been a testament to the profound impact that *IT Professional* has had on my career. It was only logical to proceed to the next step, and, after publishing several articles in the magazine, I applied to become an associate editor, which was a turning point that

allowed me to engage with groundbreaking research, collaborate with brilliant minds, and contribute to the dissemination of knowledge that shapes the future of IT. Subsequently, the role of associate EIC (responsible for special issues) further deepened my connection with the magazine, as I worked closely with a dedicated team of scientists and professionals to curate content that would inspire and inform our readership.

Now, as I assume the role of EIC, I am filled with a profound sense of responsibility and pride, leading a team of associate EICs who prioritize the rigorous review process and the highest standards of editorial integrity, ensuring that our readers can rely on the information presented in every issue. I write these lines as a testimony to my personal experience of the impact and value of the magazine, stemming from the provision of cutting-edge insights, practical solutions to real-world challenges, and valuable networking opportunities, enabling *IT Professional* to keep ahead of the curve.

Not wishing to rest on its laurels, however, *IT Professional* seeks out authors who are pushing the boundaries of their respective fields. We encourage them to share their insights and discoveries with our global readership. In this course, *IT Professional* releases outstanding and innovative articles that showcase advancements in IT, explore their impact on our professional and personal spheres, and tackle associated challenges and risks. In addition to regular papers, the magazine publishes special issues, focusing on the use of IT in a particular field or domain, always considering the interests and needs of computer science and engineering professionals. All published issues can be accessed from the "Past Issues" menu at https://www.computer.org/itpro or directly from IEEE *Xplore* or the CS Digital Library.

But our quest for fresh ideas and tireless effort to remain on the frontline of research are inextricably linked to our commitment to nurturing new talent. This, therefore, goes hand in hand with our dedication to support IT professionals with credible information.

At *IT Professional,* we recognize that the IT landscape is constantly evolving, and, to remain relevant, we must be agile and responsive. This commitment to staying on the cutting edge of research is not just a goal; it is a journey that we embark upon with every issue. From artificial intelligence and cybersecurity to data science and beyond, our aim is to feature the latest advancements and emerging trends, providing our readers with a comprehensive understanding of the ever-changing IT landscape.

This special edition is made all the more special by its handpicked articles. To celebrate this milestone, the thought was to simultaneously look backward and

APPENDIX: RELATED ARTICLES

A1. K. Bresniker et al., "What gets you hired now will not get you hired then," *IT Prof.*, vol. 26, no. 1, pp. 26–31, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3361371.

A2. I. Tomkos et al., "The 'X-factor' of 6G networks: Optical transport empowering 6G innovations," *IT Prof.*, vol. 26, no. 1, pp. 32–39, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3358971.

A3. S. Fountas, B. Espejo-García, A. Kasimati, M. Gemtou, H. Panoutsopoulos, and E. Anastasiou, "Agriculture 5.0: Cutting-edge technologies, trends, and challenges," *IT Prof.*, vol. 26, no. 1, pp. 40–47, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3358972.

A4. S. Reisman, "The beginnings of IT Professional—A personal retrospective," *IT Prof.*, vol. 26, no. 1, pp. 8–9, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3356159.

A5. N. Kshetri, "Monetizing quantum computing," *IT Prof.*, vol. 26, no. 1, pp. 10–15, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3356111.

A6. G. Strawn, "The mastermind department wishes IT Professional a happy 25th birthday!" *IT Prof.*, vol. 26, no. 1, pp. 16–18, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3356110.

A7. G. F. Hurlburt and A. Dabirian, "Why IT lessons matter," *IT Prof.*, vol. 26, no. 1, pp. 19–25, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3356112.

A8. H. Schaffer, "Will algorithms rule us?" *IT Prof.*, vol. 26, no. 1, pp. 48–49, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3356114.

A9. G. Provan, "Formal methods for autonomous vehicles," *IT Prof.*, vol. 26, no. 1, pp. 50–56, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3356158.

A10. S. J. Andriole, "How good is the team?" *IT Prof.*, vol. 26, no. 1, pp. 57–59, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3356113.

A11. I. Bojanova, "Comprehensively labeled weakness and vulnerability datasets via unambiguous formal bugs framework specifications," *IT Prof.*, vol. 26, no. 1, pp. 60–68, Jan./Feb. 2024, doi: 10.1109/MITP.2024.3358970.

forward to see where we have been and may be going. Hence, we invited known luminaries and well-seasoned *IT Professional* authors with a long track record of successful articles to contribute to this special celebratory edition. In this decision, we have also considered authors of very successful articles that have appeared in *IT Professional*. With articles ranging from quantum computing, to the next wave of agricultural IT achievement, to required 6G initiatives, we have looked ahead. Retrospectively, we look back to speculate on the future IT professional workforce composition, IT oversight and governance practices, and continuing and universal IT education. Also, ever mindful that there is a risk, we examine strong international initiatives to reduce cybervulnerability.

A 1960s adage, "We shape our tools, and thereafter our tools shape us," is often attributable to Marshall McLuhan, but it really came from Father John Culkin, SJ, a professor of communications at Fordham University and McLuhan associate. Perhaps this adage is a prophetic way to look at the amount of change reported by *IT Professional* over the past 25 years. The ever-accelerating rate of innovation has been phenomenal, culminating in the rise of world-changing generative AI. The IT professional, and everyone else, is touched by the accomplishments that have resulted and the risks that their misuse portends. It remains the case, however, that profound knowledge of that which influences change in human behavior is increasingly essential to the IT professional if burgeoning IT technology is to be ethically harnessed to better the human condition. To this end, *IT Professional* looks forward to another productive 25 years.

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