IN THIS ISSUE

In this issue, we're publishing seven articles that are related to biometrics as well as computing challenges that are specific to the elderly and disabled. I thank the authors for their patience in waiting for their accepted articles to be published. *Computer* has seen an uptick in the number of submissions, and we have a backlog of accepted articles. I hope you enjoy this issue.

In the first article,[A1] the authors propose a set of distributed architectures directed toward an accompaniment service for the elderly and their dependents (SAM Service). The service is based on the creation of a cloud service technological platform and is supported by smart devices and a specialized network that connects the elderly with their families and health professionals. The proposed method can support the decision making used by senior managers and project managers.

In the second article,[A2] the authors discuss the difficulty for elderly people to use mobile apps due to their user interface complexity. This article discusses how to improve the user-friendliness of mobile apps for elderly users via actionable guidelines based on empirical investigations. The efforts discussed have already helped provide a more friendly mobile app service to more than 100 million elderly users and have attained valuable developer and user feedback that improves the guidelines for future practice.

In the third article,[A3] the authors explain that the periocular (the visible region of the face that surrounds the eye socket) is a feature-rich area that can provide accurate identification in unconstrained or uncooperative scenarios, where the iris or face modalities may not offer sufficient biometric cues. The article explains how the COVID-19 pandemic further highlighted the importance of the ocular region because of the widespread use of masks. This article discusses the state of the art in periocular biometrics, presenting an overall framework encompassing its most significant research aspects, which include: 1) ocular definition, acquisition, and detection; 2) identity recognition, including combination with other modalities and use of various spectra; and 3) ocular soft-biometric analysis.

In the fourth article,[A4] the authors explain that the human hand carries various information about the person's characteristics, such as age, gender, and height. The article argues that, unlike other biometrics such as face and voice, hand images can be taken in a controlled environment, raising fewer privacy concerns. The article proposes a three-stream structure method for hand gender recognition by employing convolutional neural networks for feature extraction. The results show that this method excels over other methods in terms of accuracy.

In the fifth article,[A5] the authors discuss using artificial intelligence (AI) to model health and disease at population levels. The article provides researchers with a vision for how AI can empower research in population health. The article summarizes the state-of-the-art research agenda of AI-based population health and reviews how AI can be integrated into different tasks and stages of population health to solve unmet health-care needs. The article presents a recent research project titled "Compressive Population Health (CPH)" as a case study.

In the sixth article,[A6] the authors examine cognitive accessibility in the design and development of security systems and services. They argue that security systems and services can be cognitively challenging and that a lack of cognitive availability can result in digital inequality. The article discusses 10 interviews with security practitioners, and the outputs reveal that despite attempts to move toward more cognitive inclusion, consideration for people with cognitive disabilities during the design and development of necessary security functions is somewhat nonexistent.

In the seventh article,[A7] the authors explain emotion regulation (ER), which is "the process of consciously altering one's affective state, that is the underlying emotional state such as happiness, confidence, guilt, anger etc." They argue that digital technology is being employed to modify our affective states, a process known as *digital ER* (*DER*). They argue that a better understanding of DER can support ethical technology concerns. The article presents a summary of recent research on DER and discusses how social media platforms are shaping our emotional states.

—Jeffrey Voas, Editor in Chief

APPENDIX: RELATED ARTICLES

A1. F. Mácia-Pérez, I. Lorenzo-Fonseca, J.-V. Berná-Martinez, and A. Maciá-Fiteni, "Accompaniment services for the elderly: A comparison of decision-making support architectures in distributed IT," *Computer*, vol. 57, no. 6, pp. 16–28, Jun. 2024, doi: 10.1109/MC.2023.3270922.

Digital Object Identifier 10.1109/MC.2024.3377048
Date of current version: 3 June 2024

A2. D. Ran, Y. Fu, Y. He, T. Chen, X. Tang, and T. Xie, "Path toward elderly friendly mobile apps," *Computer*, vol. 57, no. 6, pp. 29–39, Jun. 2024, doi: 10.1109/MC.2023.3322855.
A3. F. Alonso-Fernandez, J. Bigun, J. Fierrez, N. Damer, H. Proença, and A. Ross, "Periocular biometrics: A modality for unconstrained scenarios," *Computer*, vol. 57, no. 6, pp. 40–49, Jun. 2024, doi: 10.1109/MC.2023.3298095.
A4. K. Jamshidi, R. Toosi, and M. A. Akhaee, "Gender recognition based on hand images employing local and global shape information," *Computer*, vol. 57, no. 6, pp. 50–61, Jun. 2024, doi: 10.1109/MC.2023.3295589.
A5. J. Wang, L. Chen, D. Lycett, D. Vernon, and D. Zheng, "Toward population health intelligence: When artificial intelligence meets population health research," *Computer*, vol. 57, no. 6, pp. 62–72, Jun. 2024, doi: 10.1109/MC.2023.3283857.
A6. B. Naqvi, J. Kävrestad, and A. K. M. Najmul Islam, "Inclusive and accessible cybersecurity: Challenges and future directions," *Computer*, vol. 57, no. 6, pp. 73–81, Jun. 2024, doi: 10.1109/MC.2024.3376827.
A7. A. Verma, S. Islam, V. Moghaddam, and A. Anwar, "Digital emotion regulation on social media," *Computer*, vol. 57, no. 6, pp. 82–89, Jun. 2024, doi: 10.1109/MC.2023.3332331.

high-speed connection, and 25% don't have a smart phone either.[1] So even if technology (for example, a device) is purchased and has Internet access, challenges persist—something as simple as calling customer service or a help desk is nearly impossible because either the instructions are impossible to understand or a passcode sent to a second smart device is required! And just forget software and hardware upgrades and keeping current with security patches.

There are other technology issues that challenge the "golden years" users, including 1) difficult user interfaces, 2) knowing whether or not to hit the ACCEPT button when prompted (because they probably have no idea what they are agreeing to), 3) remembering passwords and updating them, 4) accessing dual factor codes, 5) navigating to legitimate e-commerce sites, and not illegit ones, 6) unknowingly giving away too much personal information, and 7) phishing scams, among others.

Just consider item 7). Our golden generation is one of the biggest targets for phishing scams. These are e-mails from a supposedly "official" sender, such as the U.S. Social Security Administration or the IRS, but in actuality, the e-mails are from malicious investment professionals, fake charities, grandparent scams, etc. Phishing scams target all ages, but scammers tend to focus on older people, who tend to be more trusting. For example, recently, a 75-year-old woman was the target of a "grandparent scam," in which she lost more than US$7,000 after receiving an AI deepfake-voice-cloned phone call from her "grandson," saying he was in a car accident and going to jail if she didn't pay.[2] These "fake messages" will be urgent and may be emotional with a request for immediate money or information. The U.S. Federal Trade Commission received 2.4 million fraud reports in 2022—where imposter scams were the most common.[3]

> According to AARP, 40% of Medicare beneficiaries who live in their own dwelling do not have access to a computer with a high-speed connection, and 25% don't have a smart phone either.

Technology plays a major role in our society. One can't deny technology's role when observing the changes in our economy, politics, communication, and culture. A key underlying issue here is the *digital divide*—the gap between those who have technology access and/or can maintain technology literacy and those who can't. The examples in this message have purposely focused on the "age-related" digital divide. "Golden years" users are challenged by physical and cognitive limits, fear and resistance to change, limited access, affordability-limited skills, poorly designed user interfaces, and a lack of security understanding.

Partial solutions already exist. First, promoting *education* to raise awareness about scams is a first form of defense to teach victims to be more skeptical and not to be rushed. This could reduce valid security fears that deter technology adoption. Second, designers could put a higher