Remarks for Special Issue on Social Value Creation Using Biometrics

The Digital Transformation that is today reconfiguring our world is making itself felt in every aspect of our lives, connecting humans, things, and events in a closely interlinked web that puts the world at our fingertips. Unfortunately, there is a darker side to this brilliant new world of unprecedented convenience and knowledge sharing. Spoofing, hacking, identity theft, and malicious attacks threaten to undermine the benefits conferred by the new networked world, often forcing people to choose between convenience and security.

One of the most promising solutions to this dilemma is a technology called biometrics or body measurement. Biometrics makes it possible to identify an individual based on characteristics unique to that individual.

With biometrics, the real world can be safely connected to the digital world through an individualized security door, as it were. This door opens only for you, and it does so automatically — there's no need for passwords or pins. As the digital world becomes ever more tightly integrated in our day-to-day lives, biometrics will come to play an increasingly important role in this Digital Transformation as one of the few authentication technologies that can maximize both security and convenience.

For almost five decades, NEC has been exploring the potential of biometrics, initiating research into fingerprint recognition technology in 1971, and continuing to conduct extensive R&D ever since. Although fingerprint authentication is the best known biometric authentication technology, NEC now owns six biometric technologies — face, iris, fingerprint, palm print, finger vein, voice, and ear acoustic. All stand at the forefront of their class and many are exclusive to NEC. Dubbed "Bio-IDiom," our comprehensive suite of biometric technologies allows us to put together carefully tailored solutions to suit the very specific needs of individual clients. By combining various modalities as and when required, we

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can eliminate the risk of spoofing and malicious attacks, making it possible for anyone to enjoy the full benefits of digital convenience with total confidence that their security is assured.

Biometrics is already becoming ubiquitous in our daily lives. Fingerprint and/or face recognition is frequently used for authentication and access control at many different facilities and has already become standard on personal computers and smartphones.

Deployment of this technology depends on the circumstances of a particular application. In cases where individuals desire to be authenticated, it is relatively easy to set up a system with the optimal distance and direction between sensors and the subjects to be authenticated. Here biometrics offers the benefits of increased convenience and enhanced security. People's lives are made easier, not more complicated, and this has helped lead to widespread acceptance in society.

Biometrics can also be applied in situations where individuals are not actively seeking to be identified. Face recognition systems, for example, are often used to identify specific individuals amongst a large crowd by correlating and comparing them with images in a database. Because the subjects in this case are either uncooperative or unaware, the degree of technical difficulty is much greater than in a standard authentication scenario. NEC is making great strides in this area, working to improve identification accuracy by combining face recognition with person re-identification technology, while continuing to refine our face recognition technology. Respect for privacy and human rights are important considerations when deploying this type of biometric technology, as is full compliance with laws such as Japan's Amended Act on the Protection of Personal Information. In view of this, we have set up a department tasked with handling these administrative issues, thereby strengthening our ability to deal with any new issues that may arise in the future related to management of AI and bioinformation.

Biometrics got its start with the development of security applications that used fingerprint recognition. Unlike traditional authentication systems, biometrics provides an extremely high level of security and reliability without in any way compromising convenience. Consequently, use of biometrics is certain to accelerate. Once full implementation of face recognition is achieved, biometrics will facilitate a dramatic increase in convenience and security across a broad range of services — including retail, mass transit, financial transactions, and public services. Soon biometrics will be virtually indispensable in our daily lives, with multimodal biometrics — which combines a variety of different recognition technologies — becoming increasingly widespread thanks to its enhanced ability to provide security while promoting the development of a more efficient and equitable society.

NEC continues to make huge strides in the development of sophisticated biometric technology that offers increased reliability and precision, while streamlining the identification process to achieve unfettered convenience. Our research program is committed to finding and creating biometric solutions that give people full access to the networked world, while protecting them from potential threats to their safety and security.

In this special issue, we highlight the biometric solutions that NEC has developed and is developing, showing how these services and solutions can benefit our customers, and exploring the cutting-edge technology that supports them.

We hope you enjoy reading this issue and look forward to your ongoing support and encouragement.

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