Special Issue on

User Authentication in the IoE Era: Attacks, Challenges, Evaluation, and New Designs

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We are venturing into the new era of Internet of Everything (IoE) where smaller and smarter computing devices have begun to be integrated into the cyber-physical-social environments in which we are living our lives. Despite its great potential, IoE also exposes devices and their users to new security and privacy threats, such as attacks emanating from the Internet that can impact human users' health and safety. User authentication, as a first line of defense, has been widely deployed to prevent unauthorized access and, in many cases, is also the primary line of defense.

However, conventional user authentication mechanisms are not capable of addressing these new challenges. Firstly, it is not possible to directly utilize many Internet-centric security solutions because of the inherent characteristics of IoE devices (e.g., their limited computational capabilities and power supply). Secondly, IoE devices may lack conventional user interfaces, such as keyboards, mice, and touch screens, so that many traditional solutions simply cannot be applied. In summary, the subjects of user authentication in IoE are compelling, yet largely underexplored, and new technologies are needed by both the industry and academia. This special issue aims to provide a venue for researchers to disseminate their recent research ideas and results about user authentication in IoE.

Potential topics include but are not limited to the following:

- Lightweight authentication
- Password-based authentication
- Biometric-based authentication
- Multifactor authentication
- Continuous/implicit authentication
- Authentication for fog/edge computing
- Authentication for cloud computing
- Anonymous authentication
- Privacy enhancing technologies for authentication
- New paradigms for user authentication
- Attacks on authentication for IoE devices
- Human aspects of authentication in IoE
- Foundational principles for authentication
- Evaluation metrics for authentication schemes

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