

Special Session 8: Deep Learning Methods in Biometrics

**Chairs: Guang Chen, Beijing University of Posts and Telecommunications,
China**

Brief Description of the Session

In recent years, deep learning has emerged as a transformative force in the field of biometrics, significantly enhancing the accuracy, efficiency, and adaptability of biometric systems. This track focuses on cutting-edge deep learning techniques and their applications across diverse biometric modalities, such as face recognition, palmprint recognition, fingerprint analysis, voice authentication, and beyond. Topics of interest include, but are not limited to, the following areas:

Topics

- **Face Recognition:** Deep learning-based methods for identifying individuals through facial features, widely applied in security systems and personalized user services.
- **Palmprint Recognition:** Applying deep learning techniques to identify individuals based on palmprint patterns for contact-based and contactless biometric systems.
- **Gesture and Pose Recognition:** Techniques for detecting and analyzing body movement, orientation, and spatial positioning using deep neural networks.
- **Multimodal Biometrics:** Integrating multiple biometric traits (e.g., face, voice, fingerprint) using deep learning to enhance recognition accuracy and system robustness.
- **Deepfake Detection in Biometrics:** Leveraging deep learning to identify and mitigate deepfake threats in facial recognition systems, essential for preserving the integrity of biometric authentication.
- **Lightweight Deep Learning Models:** Designing efficient and compact deep learning architectures suitable for deployment on resource-constrained biometric devices and edge platforms.
- **Cross-Domain Adaptation:** Developing approaches that enable biometric models to generalize across varying environments, devices, or demographic distributions.
- **Federated Learning in Biometrics:** Investigating the use of federated learning to perform decentralized biometric model training, promoting data privacy without compromising accuracy.
- **Explainable AI in Biometrics:** Creating interpretable deep learning models that provide transparent decision-making, facilitating user trust and regulatory compliance.

Brief Introduction of Chair and Co-chairs with Photo



Xueyuan Gong is an Assistant Professor at the School of Intelligent Systems Science and Engineering, Jinan University. He is a recipient of Jinan University's "Young Talent Support Project" and the "Double Hundred Talent Program." He received his Ph.D. and M.Sc. degrees in Computer Science from the University of Macau in 2019 and 2014, respectively, and his B.Sc. degree in Software Engineering from the Macau University of Science and Technology in 2011.

Dr. Gong's research interests lie in deep learning and face recognition, with a particular focus on network architectures, loss function design, and optimization strategies. He has published 14 SCI-indexed papers in prominent journals such as IEEE Transactions on Circuits and Systems for Video Technology, Neural Networks, Information Fusion, and Expert Systems with Applications. He currently serves as the principal investigator of three research projects and is an active reviewer for journals including Expert Systems with Applications, Pattern Recognition, Applied Soft Computing, Neurocomputing, and Information Sciences.