



Ng Tiong Sik (황충식)

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Working Experience

- **Research and Development Engineer** **2019.03–2019.08**
Recogine Technology Sdn. Bhd. *Subang Jaya, Selangor*
Worked on vehicle classification using TensorFlow and Keras. Helped train and test license plate recognition (LPR) models and created scripts for preparing datasets and analyzing model performance.
- **Application Engineer** **2017.09–2017.12**
Hitachi Hokenso Sdn. Bhd. *Petaling Jaya, Selangor*
Worked as a back-end developer using the Java Spring Framework, handling debugging and server deployment with Oracle WebLogic Server. Created reports utilizing Jasper Framework and SQL stored procedures.
- **Research Assistant** **2016.09–2017.08**
Multimedia University *Ayer Keroh, Melaka*
Served as a research assistant, focusing on cryptographic digital signatures and security proofs, analyzing signature schemes to enhance their security through tight reduction techniques.

Education Background

- Doctorate in Engineering**.....
Yonsei University **2020.03–2025.02**
○ *On the Realization of Conditional Periocular-Face Biometrics for Flexible Deployment* (유연한 배포를 위한 조건부 눈 주위-얼굴 생체인식의 구현)
- Master of Science (Information Technology)**.....
Multimedia University **2016.09–2019.01**
○ *Design of Tight Security Reduction for Signature Schemes*
- Bachelor of Engineering (Hons.) (Electronics Majoring in Computer)**.....
Multimedia University **2012.02–2016.07**
○ *Secure Digital Medical Certificate System: Identity-Based Signatures*

Skills and Qualifications

- Skills**.....
- **Development:** PyTorch, Docker, Tensorflow.
- **Programming:** Python, Android Java, Java SE, .NET, C++.
- **OS Software Development:** Windows, Linux Ubuntu, Android, Windows Phone.
- **Languages Spoken:** English (Fluent), Bahasa Melayu (Fluent), Mandarin (Fluent).

Qualifications.....

- TOEIC (Test of English for International Communication): 970/990 (*December 2022*).
- TOEFL (Test of English as a Foreign Language): 96/120 (*July 2018*).

Others.....

- **Professional Body:** Registered Graduate Engineer under Board of Engineers Malaysia (BEM) (GE158045A).

Awards

- **Scholarship (현대차 정몽구 장학금):** Hyundai Motor Company Chung Mong-koo Foundation (*March 2020 – February 2024*).
- **National Trusted Cryptographic Algorithm List Proposal (MySEAL):** 'Malaysian Digital Signature Algorithm Proposal: TNC Signature Scheme' (*Finalist*).
- **International Invention and Innovation Exhibition 2016 (ITEX 2016):** 'An Online Digital Medical Certificate System Using Identity-Based Signature' (*Gold*).

Notable Projects

- **NRF Project (S. Korea):** 'Multimodal Biometrics Conditioning and Data-driven Template Hashing – Member (Ph.D. Researcher)'
Researched advanced facial and periocular based recognition techniques using AI. Worked on improving security by protecting biometric data with special encryption methods. Developed innovative methods to recognize faces even when partially covered by masks or sunglasses.
- **National Trusted Cryptographic Algorithm List Proposal (MySEAL):** 'Malaysian Digital Signature Algorithm Proposal: TNC Signature Scheme' – Member (Finalist)
Proposed the TNC Signature, compatible with Schnorr signatures, providing full security proof and implementation using C and Libgcrypt for both discrete logarithm and elliptic curve settings.
- **FRGS (Malaysia):** 'Tight Security Reduction Techniques for Cryptography Primitives' – Member (Master Researcher)
Studied the effectiveness and techniques of security reduction in cryptographic schemes. Applied security reduction methods to enhance the security of existing digital signature schemes.
- **ITEX Exhibition 2016:** 'An Online Digital Medical Certificate System Using Identity-Based Signature'
Implemented Cha-Cheon's IBS and ECC-based ElGamal encryption using Java Applet, integrating QR code-based digital signature generation on Android with web server verification.

Publications

Journals.....

- **Flexible Secure Biometrics: A Privacy Preserving Modality-Invariant Recognition System.**
Tiong-Sik Ng, Jihyeon Kim, Andrew Beng Jin Teoh
In *IEEE Transactions on Information Forensics and Security*, vol. 20, pp. 4610–4621, **2025**.
doi: 10.1109/TIFS.2025.3559785.
- **Attention-aware Ensemble Learning for Face-Periocular Cross-modality Matching.**
Tiong-Sik Ng, Andrew Beng Jin Teoh
In *Applied Soft Computing*, vol, 175, pp. 113044, **2025**. doi: 10.1016/j.asoc.2025.113044.

○ **Self-Attentive Contrastive Learning for Conditioned Periocular and Face Biometrics.**

Tiong-Sik Ng, Jacky Chen Long Chai, Cheng-Yaw Low, Andrew Beng Jin Teoh

In *IEEE Transactions on Information Forensics and Security*, vol. 19, pp. 3251–3264, **2024**.
doi: 10.1109/TIFS.2024.3361216.

○ **On the Representation Learning of Conditional Biometrics for Flexible Deployment.**

Tiong-Sik Ng, Cheng-Yaw Low, Jacky Chen Long Chai, Andrew Beng Jin Teoh

In *IEEE Access*, vol. 11, pp. 82338–82350, **2023**. doi: 10.1109/ACCESS.2023.3301150.

○ **Bridging the Divide Between Left and Right Palmprints for Cross-Chirality Verification.**

Chengrui Gao, Ziyuan Yang, **Tiong-Sik Ng**, Min Zhu, Andrew Beng Jin Teoh

In *IEEE Internet of Things Journal*, (accepted, to appear), **2025**. doi: 10.1109/JIOT.2025.3575501.

○ **Lightweight omnidirectional super-resolution via frequency-spatial fusion and equirectangular projection correction.**

Dezhi Li, Yonglin Chen, Xingbo Dong, **Tiong-Sik Ng**, Zhe Jin, Shengyuan Wang, Wen Sha

In *SPIE Journal of Electronic Imaging*, vol. 34 (2), 023008, **2025**. doi: 10.1117/1.JEI.34.2.023008.

○ **Learnable Anchor Embedding for Asymmetric Face Recognition.**

Jungyun Kim, **Tiong-Sik Ng**, Andrew Beng Jin Teoh

In *MDPI Electronics*, vol. 14 (3), 455, **2025**. doi: 10.3390/electronics14030455.

○ **Conditional Deployable Biometrics: Matching Periocular and Face in Various Settings.**

Jihyeon Kim, **Tiong-Sik Ng**, Andrew Beng Jin Teoh

In *Journal of Informatics and Web Engineering*, 3(3), pp. 302–313, **2024**. doi: 10.33093/jiwe.2024.3.3.19.

○ **Enhancing Image Dehazing with a Multi-DCP Approach with Adaptive Airlight and Gamma Correction.**

Jungyun Kim, **Tiong-Sik Ng**, Andrew Beng Jin Teoh

In *MDPI Applied Sciences*, vol. 14 (17), 7978, **2024**. doi: 10.3390/app14177978.

○ **Group Identity-Based Identification: Definitions, Construction and Implementation.**

Ji-Jian Chin, Apurva Kiran Vangujar, **Tiong-Sik Ng**, Jason Chia, Sook-Chin Yip

In *Malaysian Journal of Mathematical Sciences*, vol. 15, pp. 123–139, **2020**.

○ **Identity-Based Signature using Bilinear Pairings on iPhones.**

Wai-Choong Wong, **Tiong-Sik Ng**, Ji-Jian Chin

In *International Journal of Cryptology Research*, vol. 6 (1), pp. 31–46, **2018**.

Conference Proceedings

○ **Conditional multimodal biometrics embedding learning for periocular and face in the wild.**

Tiong-Sik Ng, Cheng-Yaw Low, Jacky Chen Long Chai, Andrew Beng Jin Teoh

In *26th International Conference on Pattern Recognition (ICPR)*, pp. 812–818, **2022**.

○ **Fuzzy MP - A Fuzzy Digital Signature Scheme with Biometrics.**

Tiong-Sik Ng, Andrew Beng Jin Teoh

In *Proceedings of the Mobile Networks and Management: 11th EAI International Conference, (MONAMI)*, pp. 299–315, **2020**.

○ **Improving Signature Schemes With Tight Security Reductions.**

Tiong-Sik Ng, Syh-Yuan Tan, Ji-Jian Chin

In *The 15th International Conference on Information Security Practice and Experience (ISPEC)*, pp. 273–292, **2019**, Springer, Cham.

- **A Variant of BLS Signature Scheme with Tight Security Reduction.**
Tiong-Sik Ng, Syh-Yuan Tan, Ji-Jian Chin
 In *Proceedings of The 9th EAI International Conference on Mobile Networks and Management (MONAMI)*, pp. 150–163, **2017**, Springer, Cham.
 - **A Variant of Schnorr Signature Scheme with Tight Security Reduction.**
Tiong-Sik Ng, Syh-Yuan Tan, Ji-Jian Chin
 In *Proceedings of The 8th International Conference on ICT Convergence (ICTC 2017)*, pp. 411–415, **2017**, IEEE.
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- **Efficient Fork-Free BLS Multi-signature Scheme with Incremental Signing.**
 Syh-Yuan Tan, **Tiong-Sik Ng**, Swee-Huay Heng
 In *International Conference on Provable Security (ProvSec)*, pp. 250–268, **2024**.
 - **Recognizability embedding enhancement for very low-resolution face recognition and quality estimation.**
 Jacky Chen Long Chai, **Tiong-Sik Ng**, Cheng-Yaw Low, Jaewoo Park, Andrew Beng Jin Teoh
 In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 9957–9967, **2022**.
 - **Group Identity-Based Identification: Definitions and Construction.**
 Apurva Kiran Vangujar, **Tiong-Sik Ng**, Ji-Jian Chin, Sook-Chin Yip
 In *Proceedings of the 7th International Cryptology and Information Security Conference 2020 (Cryptology)*, pp. 51–64, **2020**.
 - **Hierarchical Twin-Schnorr Identity-Based Identification Scheme.**
 Apurva Kiran Vangujar, Ji-Jian Chin, Syh-Yuan Tan, **Tiong-Sik Ng**
 In *Proceedings of 6th International Cryptology and Information Security Conference 2018 (Cryptology)*, pp. 64–75, **2018**.
 - **Implementation of a Pairing-Based Identity-Based Signature on iPhones.**
 Wai-Choong Wong, **Tiong-Sik Ng**, Ji-Jian Chin
 In *Proceedings of 5th International Cryptology and Information Security Conference 2016 (Cryptology)*, pp. 166–174, **2016**.

Referees

- Available Upon Request