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DEPARTMENT OF
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On Developing a Lip-password Based Face Recognition System

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Funding Scheme: **Innovation and Technology Fund**
Project Ref. No.: **ITS/339/18**
Amount Awarded (to HKBU): **HK$ 1,354,729**
Project Period: **Sept 2019 - Feb 2021**

OBJECTIVES

1. To integrate lip-password into the face recognition system as a single learning paradigm;
2. To select and design the underlying models and algorithms of building up the lip-password-based face recognition system.

HIGHLIGHTS

Point 1: Lip-password, a new innovative IT technology, for speaker verification

- Compared to the common character-based password
  - Merit of Lip-password: Almost impossible to be stolen
- Compared to the existing biometrics
  - Merit of Lip-password: Lip-password can be changed at any time

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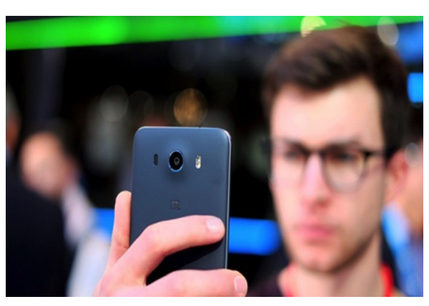
Point 2: Lip-password is technically sound and feasible

- A prototype system has been successfully developed
  - The Gold Medal with Congratulations of Jury" (i.e. the highest grade in Gold Medals) and "Award of Excellence from Romania", both awarded at the 46th International Exhibition of Inventions of Geneva 2018
- A US Non-provisional Patent granted: US9,159,321B2

Point 3: A natural combination of lip-password and face recognition

- Dual modality provides the enhanced security system for speaker verification
- Wide application with a significant social impact
  - Door-access control
  - Mobile-access control
  - Financial Transactions
  - …



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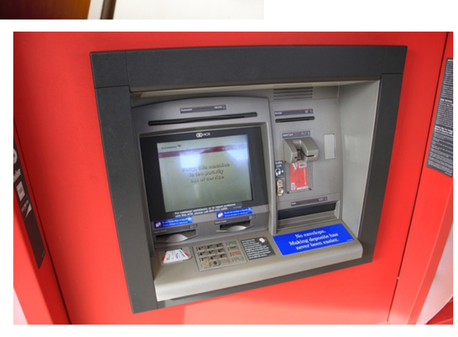

Source from https://pixabay.com

SELECTED PUBLICATIONS

1. M. Pang, Y.M. Cheung, B.H. Wang and J. Lou, "Synergistic Generic Learning for Face Recognition from a Contaminated Single Sample per Person", *IEEE Transactions on Information Forensics and Security*, DOI:10.1109/TIFS.2019.2919950.
2. M. Pang, Y.M. Cheung, R.S. Liu, J. Lou and C. Lin, "Toward Efficient Image Representation: Sparse Concept Discriminant Matrix Factorization", *IEEE Transactions on Circuits and Systems for Video Technology*, DOI: 10.1109/TCSVT.2018.2879833.
3. M. Pang, Y.M. Cheung, B.H. Wang and R.S. Liu, "Robust Heterogeneous Discriminative Analysis for Face Recognition with Single Sample per Person", *Pattern Recognition*, Vol. 89, pp. 91-107, 2019.
4. X. Liu and Y.M. Cheung, "Learning Multi-Boosted HMMs for Lip-Password Based Speaker Verification", *IEEE Transactions on Information Forensics and Security*, Vol. 9, No. 2, pp. 233-246, 2014.
5. Y.M. Cheung, M. Li, X. Cao and X.G. You, "Lip Segmentation under MAP-MRF Framework with Automatic Selection of Local Observation Scale and Number of Segments", *IEEE Transactions on Image Processing*, Vol. 23, No. 8, pp. 3397-3411, 2014.