논문 정리

핸드폰의 mac address와 face recognition을 활용한 person identification 연구

1. MAC Based Security Integration using Face Recognition in Cloud Environment (2021)

- **Input data**: human face dataset
- **Model**: FCN(Fully Convolutional Network) ← Keras
- **Back-end**: Django
- **Summary**: 클라우드 환경에서 mac 주소와 사용자의 얼굴을 통합

2. Face Security Authentication System Based on Deep Learning and Homomorphic Encryption (2022)

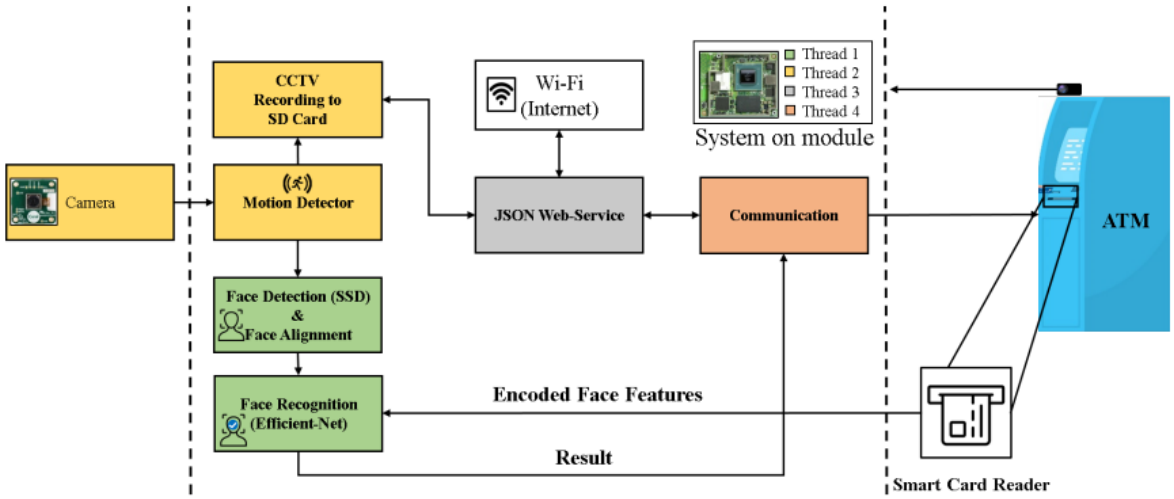
- **Model**: MobileNet + FaceNet
- **Front-End & Back-End**: Python web module, MySQL DB
- **Summary:** 딥러닝과 MAC authentication(메시지 인증 코드) 기반 얼굴 인증 보안 시스템 연구

3. On-device facial verification using NUF-Net model of deep learning (2019)

- **Input data**: CAISA-WebFace, VGGFace2
- **Test data**: LFW
- **Model**: NUF-NET(FaceNet + Inception-ResNet-V1)
- **Multi-Modal**: Raspberry Pi 3
- **Summary:** 라즈베리 파이 3과 같은 저사양 장치에서 facial verification 성능 향상 모델 개발

4. On-device Face Authentication System for ATMs and Privacy Preservation (2023)

- **Model**: SSD(Face Detection), Efficient-Net(Face Recognition)
- **Multi Modal**: Camera, EdgeTPU
- **Summary**: 보안 강화를 위해 얼굴 인식 기술과 스마트 카드의 메모리를 활용해 얼굴 정보를 저장하고 검사



Face Recognition System for Automated Tailor Machine

5. Autonomous Learning for Face Recognition in the Wild via Ambient Wireless Cues (2019)

- **Model**: FaceNet + AutoTune(https://github.com/Wayfear/Autotune)
- **Multi-Modal**: Smart Phone, Remote Camera
- **Summary**: Wi-Fi 데이터(무선 신호)를 활용한 심층 얼굴 인식 시스템

6. Real-Time Smart Attendance System using Face Recognition Techniques (2019)

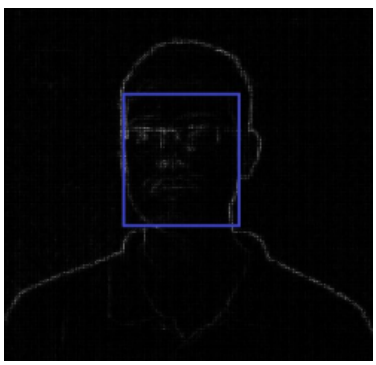
- **Algorithm**: Viola-Jones Face Detection algorithm, AdaBoost, PCA
- **Multi-Modal**: Camera

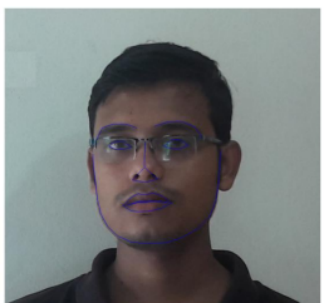
- **Summary**: 학생이 등록하면 카메라가 얼굴을 감지하고 Facial landamark를 DB에 저장한 후 이를 활용한 스마트 출석 시스템

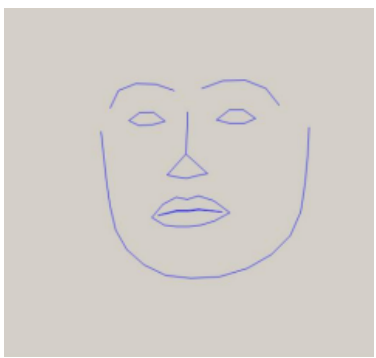
Fig. 1. 68 landmarks present on the face

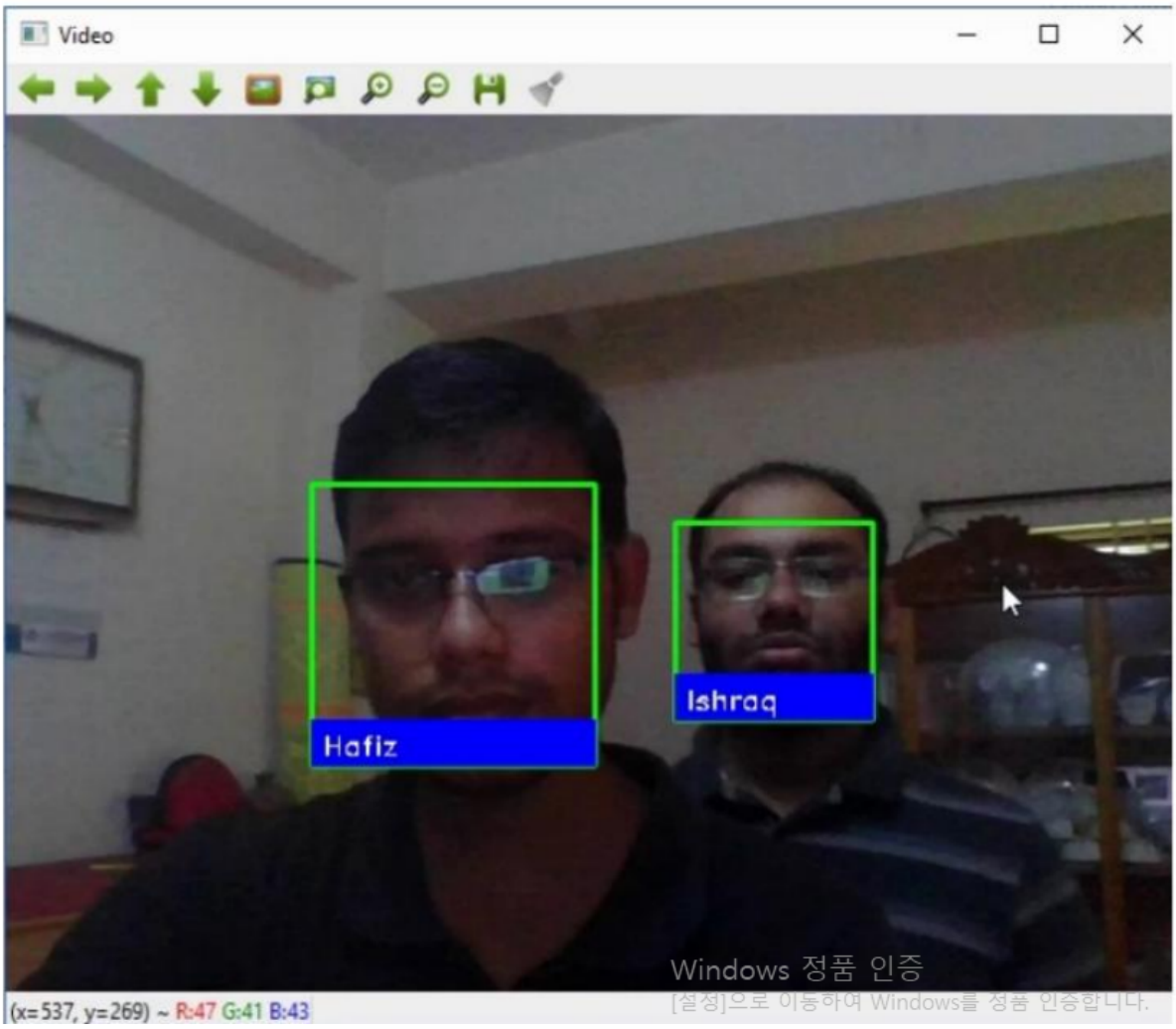
7. HOG-CNNBasedRealTimeFaceRecognition (2018)

- **Algorithm**: HOG
- **Model**: CNN
- **Multi Modal**: Mobile Device
- **Summary**: HOG 알고리즘으로 캡처한 이미지로 facial landmark(코 끝, 눈 왼쪽)를 획득하고 이를 기반으로 얼굴 감지









8. FaceTime – Deep Learning Based Face Recognition Attendance System(2017)

- **Model**: FaceNet
- **Multi-Modal**: Web Camera
- **Summary**: CNN Cascade(얼굴 감지) → 얼굴 랜드마크 & 이미지 포지셔닝 → 얼굴 임베딩(FaceNet) → 서포트 벡터 머신(SVM) 분류기

a) face landmarks

TABLE I. CONFUSION MATRIX

Classes					
Empl 1	*Empl 2*	*Empl 3*	*Empl 4*	*Empl 5*	*Predictions*
230	8	0	6	1	*Empl 1*
4	269	0	3	1	*Empl 2*
0	0	301	0	3	*Empl 3*
8	4	9	138	0	*Empl 4*
2	5	6	1	227	*Empl 5*

9. An improved face recognition algorithm and its application in attendance management system (2020)

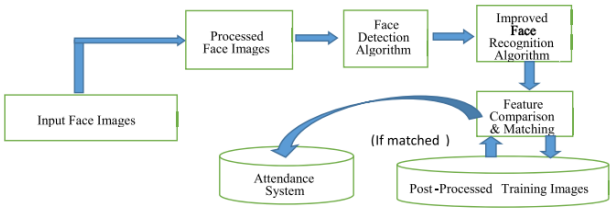
- **Algorithm**: LBPH, Haar Cascades, SVM
- **Multi-Modal**: Web Camera
- **Summary**: 고급 이미지 처리 알고리즘(LBPH, Haar Cascades)을 활용하여 얼굴 인식 성능 개선 연

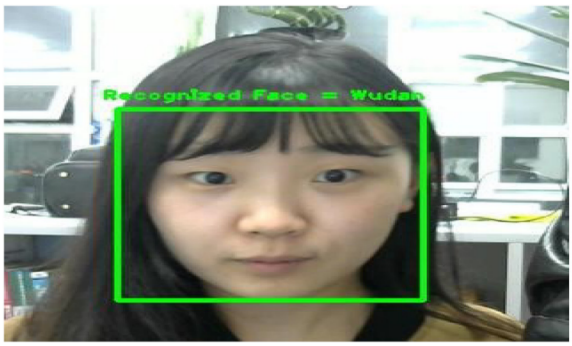
Table 4
Face recognition accuracy methods comparison.

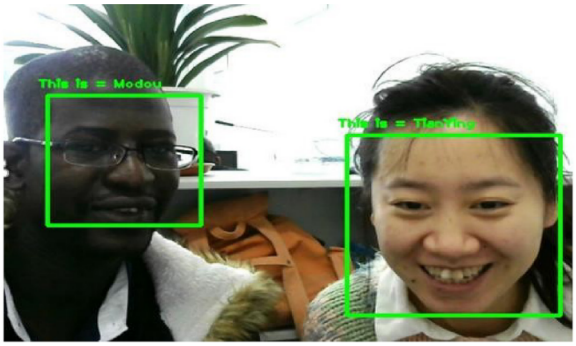
Methods	Accuracy (%)
LBP + SVM + PSO [26]	96.54
Original LBP [33]	89.3
DCP + LBP + SVM [14]	97.50
Proposed Method	99.0

Table 5
Shows database attendance records.

ID	Name	Time_In	Time_Out
1	Modou Bah	6/16/2016 09:24	6/16/2016 13:48
2	Wang Long	6/16/2016 09:31	6/16/2016 13:49
3	Tian Ying	6/16/2016 09:37	6/16/2016 13:48
4	Mrs.Wudan	6/16/2016 09:38	6/16/2016 13:47

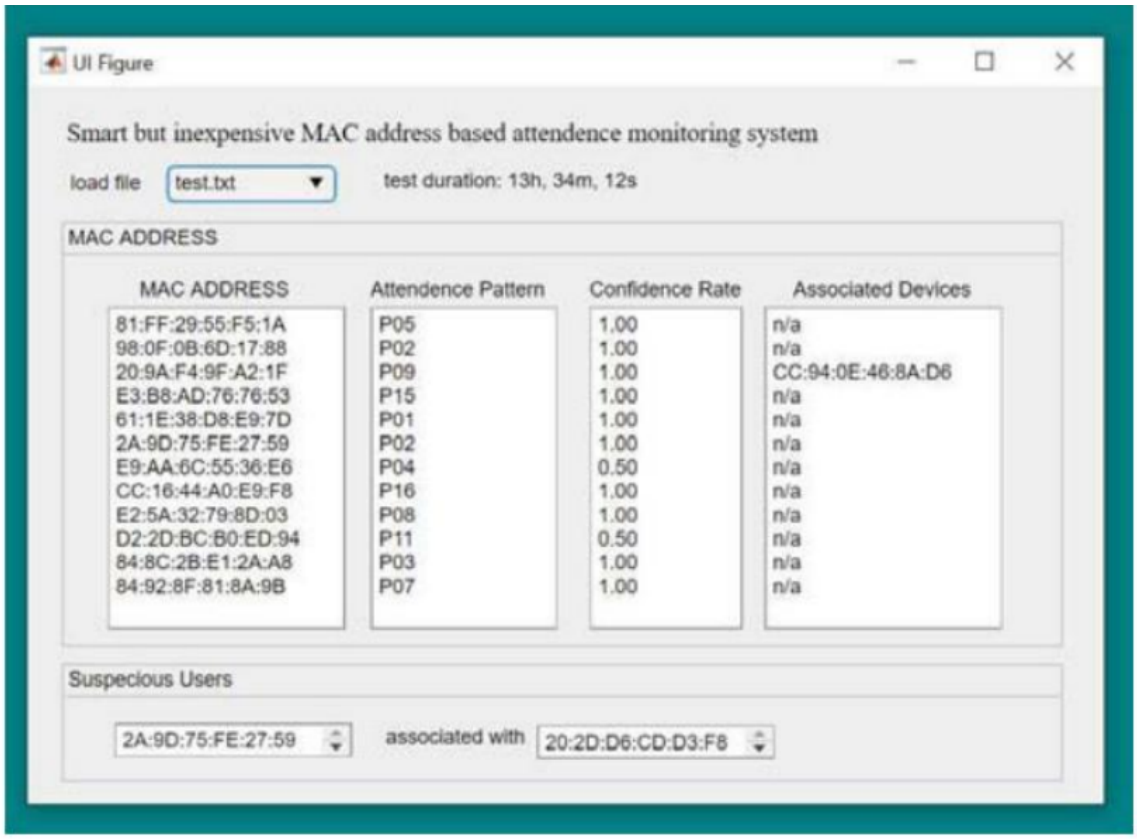






10. An Inexpensive but Smart MAC-Address Based Attendance Monitoring System (2020)

- **Multi-Modal**: Smart Phone, ESP8266 Chip
- **Summary**: Wi-Fi를 활용하여 MAC 주소 기반 출석 모니터링 시스템

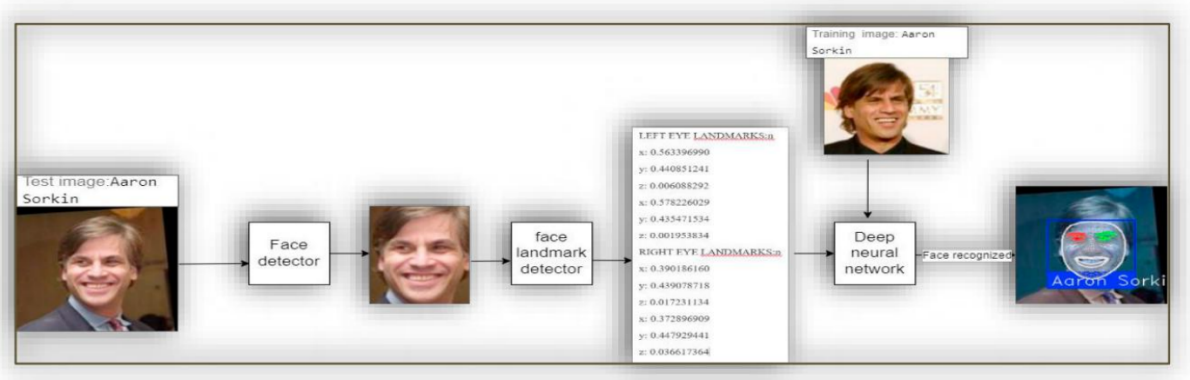


11. Face Detection and Recognition Using Face Mesh and Deep Neural Network (2019)

Algorithm: Canny edge Detection,

Model: Mediapipe

Summary: 얼굴 랜드마드를 추출하고 3D 얼굴을 재구성한 후 Face Mesh로 얼굴 인식



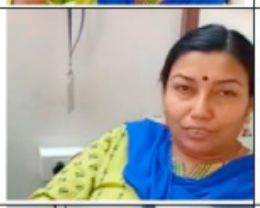
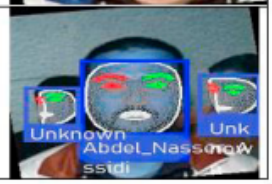
Name of the person	(a) Tripty S	(b) Neelima	(c) Shivalila	(d) Abdel_Nasser_Assidi
Training image				
Test image				
Output				

Fig 5:Face detection and recognition results on pictures captured in real-time and images from the LWF dataset