MOUXIAO HUANG

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EDUCATION

University of Chinese Academy of Sciences (UCAS, SIAT)   *Sep. 2020 - Jun. 2023*
Master of Computer Science (Supervisor: **Yu Qiao** / Team: **MMLAB**)

South China University of Technology (SCUT)   *Sep. 2016 - Jun. 2020*
Bachelor of Automation (GPA: **3.72 / 4.0**, Comprehensive Ranking: **Top 2.1%**)

South China University of Technology (SCUT)   *Sep. 2015 - Jun. 2016*
Bachelor of Medical Image and I changed my major to Automation due to personal interest

Tech Stack: Data Structure and Algorithm; Python, C++, E4A; PyTorch, TensorFlow, Paddle, etc.

WORK EXPERIENCE

Huawei / Noah's Ark Lab, *Data Scientist*   *Aug. 2023 - present*
- Research on Artificial Intelligence, including Generated Content Detection, Document Manipulation Detection, and Multimodal Large Models
- Deployment of Algorithm

Baidu / Vision Department, *Machine Learning Intern*   *Dec. 2022 - Aug. 2023*
- Research on Visual Parameter-Efficient Tuning and Face Anti-spoofing

Alibaba / DAMO Academy, *Machine Learning Intern*   *Aug. 2021 - Nov. 2022*
- Research on Face Uncertainty Quantification and Out-of-Distribution (OOD) Detection:

- Propose Random Temperature Scaling (RTS), a unified framework for uncertainty model and FR system.
- The benefits of RTS are two-fold. 1) In the training phase, it can adjust the learning strength of clean and noisy samples for stability and accuracy. 2) In the test phase, it can provide a score of confidence to detect uncertain, low-quality and even OOD samples, without training on extra labels.
- SOTA performance in face verification and OOD detection tasks (**increased by 0.9% in AUC**).

- Research on Unsupervised Domain Adaptation:

- Design a Domain-Adaptive and Cross-Scale Transformer (DACS-T) for unsupervised domain adaptation. 1) The source and target features are translated between each other's domains by cross attention. 2) Utilize cross scale matching to align features better and alleviate the problem due to large scale gap.
- SOTA performance on UDA benchmarks, including VisDA-2017 / DomainNet (**increased by 1.1% / 1.3%**).

SIAT / MMLAB, *Visiting Student*   *Oct. 2019 - Apr. 2020*
- Research on 3D Face Reconstruction:

- Propose an End-to-End parallel network to predict uv position map and 3DMM parameters of input face at once based on prior work PRNet. The fringe effect of the original PRNet method is effectively reduced.

PUBLICATION

Selected publications are listed below:

- K Wang, G Zhang, H Yue, Y Liang, **M Huang**, et al. CSDG-FAS: Closed-Space Domain Generalization for Face Anti-spoofing [J]. ***International Journal of Computer Vision (IJCV) 2024***.
- Wang K*, **Huang M* (Equal Contribution)**, Zhang G*, et al. Dynamic Feature Queue for Surveillance Face Anti-spoofing via Progressive Training [C]. ***CVPRW 2023***.
- Shang L*, **Huang M* (Equal Contribution)**, Shi W, et al. Improving Training and Inference of Face Recognition Models via Random Temperature Scaling [C]. ***AAAI 2023***.
- **Huang M**, et al. Improved Target Signal Source Tracking and Extraction Method Based on Outdoor Visible Light Communication Using a Camshift Algorithm and Kalman Filter [J]. ***Sensors, JCR 1 / IF: 3.847***.

- Guan W, Chen X, **Huang M**, et al. High-Speed Robust Dynamic Positioning and Tracking Method Based on Visual Visible Light Communication Using Optical Flow Detection and Bayesian Forecast [J]. *IEEE Photonics Journal*, *JCR 2 / IF: 2.627*

COMPETITION

CVPR Face Anti-spoofing (FAS) Workshop and Challenge *First Prize* *Mar. 2023*
- Our proposed Dynamic Feature Queue and Progressive Training Strategy for FAS resulted in outstanding performance, as evidenced by our achievement of **top rank on the ACER metric with a score of 4.73%**.

CCF BDCI Competition (Remote Sensing Image Segmentation) *First Prize* *Dec. 2020*
- By addressing the issue of category imbalance and utilizing a multi-model approach (consisting of both multi-classification and binary-classification models) with a voting method, we have achieved a lead of **1.2%/0.74% over the second-place finisher**.

PROJECT

National Undergraduate Innovative Training Program *Project Lead* *Apr. 2018 - Apr. 2019*

- Research on Outdoor Visible Light Communication (VLC) System Based on Object Tracking Algorithm:
- Optimize LED assembly and utilize small FOV PD array diversity reception to improve the power ratio of the LOS channel, reduce channel attenuation, and optimize channel characteristics.
- Propose an improved Camshift algorithm that utilizes Kalman filter to predict the target's next motion state based on its current position and velocity information, allowing for effective tracking of targets in complex outdoor scenarios.

The "Climbing Program" Special Fund Project *Apr. 2017 - Apr. 2019*

- Research on Fusion Localization Technology of Mobile Robots Based on Visible Light Communication:
- Propose a high-precision indoor mobile robot localization and navigation system based on VLC, utilizing optical flow detection and Bayesian forecasting for dynamic positioning and tracking.

HONORS & AWARDS

Outstanding Student Award of SIAT of UCAS	*Dec. 2022*
Achievement Award of SIAT of UCAS	*Dec. 2021*
Nomination Award of Top Ten Pacemakers to Merit Student of SCUT (*Top 16 / 13, 000*)	*Nov. 2019*
He Jingtang Science and Technology Innovation Award (*Top 5 / 13, 000*)	*Nov. 2019*
Guangzhou Automobile Group (GAC) Scholarship	*Nov. 2019*
China National Scholarship	*Oct. 2018*
China National Encouragement Scholarship	*Oct. 2017*