



# ZHANG KAIPENG

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## Research Interest



Face analysis



Few-shot learning



Dynamic network architecture



Incremental active learning



## Selected Honors

- 6000+ Google Scholar Citations
- 4000+ Github Stars
- MSRA fellowship nomination
- JSPS Research Fellowship
- 1<sup>st</sup> Place, DFW Challenge, CVPR
- 1<sup>st</sup> Place, LAP Challenge, CVPR
- 1<sup>st</sup> Place, EmotiW Challenge, ICM



## About Me

I am a final-year Ph.D. student at The University of Tokyo. My research interest mainly lies in computer vision and deep learning, and focuses on **face analysis, dynamic network architecture, incremental active learning, and few-shot learning**.

I did high-impact works that received over **6000 citations** and **4000 GitHub Stars**. Besides, I won some **competitions** in top conferences. I also was awarded **JSPS Research Fellowship**, the top Ph.D. fellowship in Japan.

I also have industrial experience in developing AI-related products. I was a researcher in SenseTime and a technical consultant in ULSee. I also did research internships at MSRA, Tencent, and MMLAB of SIAT.

*"Think like an amateur, do as an expert."* -by Takeo Kanade (金出武雄)



## Education

|  |                                   |              |
|--|-----------------------------------|--------------|
| <b>2019.04-2022.03 (expected)</b>  | <b>The University of Tokyo</b>    | <b>Ph.D.</b> |
| Graduate School of Information Science and Technology<br>supervised by Prof. Yoichi Sato |                                   |              |
| <b>2016.09-2018.08</b>   | <b>National Taiwan University</b> | <b>M.S.</b>  |
| Graduate Institute of Networking and Multimedia<br>supervised by Prof. Winston Hsu.      |                                   |              |
| <b>2012.09-2016.07</b>   | <b>Donghua University</b>         | <b>B.E.</b>  |
| Computer Networking  |                                   |              |



## Experience

|   |                                |
|---|--------------------------------|
| <b>2019.04-Present</b>  | <b>The University of Tokyo</b> |
| <b>Topic: Semantic segmentation, few-shot learning, active learning, incremental learning, and dynamic network architecture</b>   |                                |
| Ph.D. Student & JSPS Fellowship Researcher (日本学术振兴会特别研究员)<br>Advisor: Prof. Yoichi Sato   |                                |
| <ul style="list-style-type: none"><li>• PI: Incremental active learning for semantic segmentation (JSPS Project)</li><li>• Few-shot semantic segmentation by dynamic discriminative prototypes</li><li>• Incremental learning for person Re-ID.</li><li>• Mixture of Experts (MoE) -based CNN. NeurIPS 2021</li><li>• Context aggregation and feature super-resolution modules for real-time semantic segmentation. ICRA 2020</li></ul> |                                |
| <b>2020.09-2021.03</b>  | <b>Tencent</b>                 |
| Research intern in AI Lab & TEG AI Advertisement Center   |                                |
| <ul style="list-style-type: none"><li>• Mixture of Experts (MoE) -based CNN. NeurIPS 2021</li><li>• AI in advertisement (focus on advertisement content analysis)</li></ul>   |                                |



## Academic Service

- Senior PC member of IJCAI
- PC member/Reviewer of NeurIPS, ICLR, AAAI, ECCV, ICCV, CVPR, BMVC, ACCV, WACV
- Reviewer of TPAMI, TIP, TNNLS, TCSVT, TMM, Neurocomputing, SPL, and Pattern Recognition



## Masterpiece

- MTCNN  
One of the most influential works in the field of face detection
- Center loss  
One of the most influential works in the field of face recognition and metric learning



## Experience



**MEDIATEK**

**2018.09-2019.03**

**SenseTime**

**Topic: Face recognition and incremental active learning**

Researcher

- Build an incremental city-level face recognition learning and recognition system for ShenZhen Security Bureau.

**2018.01-2018.07**

**Microsoft Research Asia**

**Topic: Face recognition**

Research intern

- Large-scale face recognition for NIST FRVT

**2016.09-2018.08**

**National Taiwan University**

**Topic: Face recognition, super-resolution, and emotion recognition**

Master student & Research assistant (supported by MediaTek)

Advisor: Prof. Winston Hsu

- Ultra-low resolution face images super-resolution via super-identity loss (ECCV 2018) and facial attributes assistance (CVPRW 2018).
- Disguised face recognition in the wild.  
1<sup>st</sup> Place of Disguised Faces in the Wild Challenge, CVPR 2018.
- Group-level emotion recognition in the wild.  
1<sup>st</sup> Place of EmotionW 2017, 2<sup>nd</sup> Place of EmotionW 2018 and 2019
- Engagement Prediction  
3<sup>rd</sup> Place of EmotionW 2019
- Virtual try-on shoe. ACCV 2018

**2016.10-2018.03**

**ULSee Technology**

**Topic: Face detection, alignment, recognition, and attribute classification**

Technical consultant

- Consultants in developing algorithms for face analysis products.

**2017.07-2017.09**

**Tencent**

**Topic: Face detection and alignment**

Research intern in AI Lab

- Inside-cascaded CNN for real-time face detection. ICCV 2017
- MTCNN (Pro) for real-time face detection and alignment.

**2015.08-2016.08**

**MMLab of SIAT**

**Topic: Face detection, alignment, recognition, and attribute classification**

Visiting student

- Center loss for discriminative feature learning. ECCV 2016 & IJCV  
*High academic and industrial impacts*  
*The most cited face recognition paper published in recent five years.*  
*The 21<sup>st</sup> most cited paper in the history of ECCV (1990-2021)*
- A multi-task cascaded CNN for face detection (a.k.a MTCNN). IEEE SPL  
*High academic and industrial impacts*  
*The most cited face detection paper published in recent ten years.*  
*The 2<sup>nd</sup> most cited paper in the history of IEEE SPL (1994-2021)*
- Coarse-to-fine training for CNN-based facial attributes recognition  
1<sup>st</sup> Place ChaLearn Looking at People Challenge, CVPR 2016.



### Regular paper (\* indicates equal contribution)

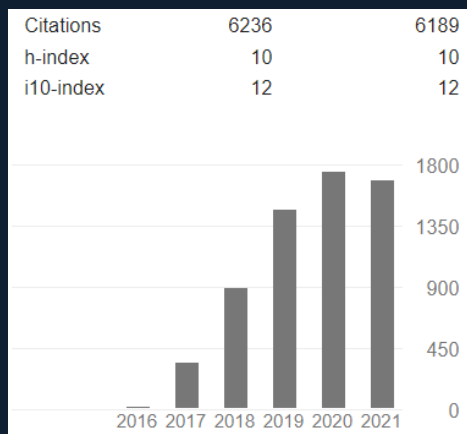
- As the first author. About few-shot segmentation. Under review.
- As a co-author. About color filter design. Under review.
- As a co-author. About incremental learning for person Re-ID. Under review.
- As a co-author. About masked face recognition. Under review.
- Kaipeng Zhang, Zhenqiang Li, Zhifeng Li, Wei Liu and Yoichi Sato. Neural Routing by Memory. NeurIPS 2021
- Zhanpeng Zhang, Kaipeng Zhang. FarSee-Net: Real-Time Semantic Segmentation by Efficient Multi-scale Context Aggregation and Feature Space Super-resolution. ICRA 2020.
- Yandong Wen\*, Kaipeng Zhang\*, Zhifeng Li and Yu Qiao. A Comprehensive Study on Center Loss for Deep Face Recognition., IJCV 2019.
- Kaipeng Zhang, Zhanpeng Zhang, Chia-Wen Cheng, Winston Hsu, Yu Qiao, Wei Liu and Tong Zhang. Super-Identity Convolutional Neural Network for Face Hallucination. ECCV 2018.
- Chao-Te Chou, Cheng-Han Lee, Kaipeng Zhang, Hu Cheng Lee and Winston Hsu. Pose Invariant Virtual Try-On Shoe with Conditional Image Completion. ACCV 2018.
- Cheng-Han Lee, Kaipeng Zhang, Hu Cheng Lee, Chia-Wen Cheng and Winston Hsu. Attribute Augmented Convolutional Neural Network for Face Hallucination. CVPRW 2018.
- Kaipeng Zhang, Zhanpeng Zhang, Hao Wang, Zhifeng Li, Yu Qiao and Wei Liu. Detecting Faces Using Inside Cascaded Contextual CNN. ICCV 2017.
- Yandong Wen, Kaipeng Zhang, Zhifeng Li and Yu Qiao. A Discriminative Deep Feature Learning Approach for Face Recognition. ECCV 2016.
- Kaipeng Zhang, Zhanpeng Zhang, Zhifeng Li and Yu Qiao. Joint Face Detection and Alignment using Multi-task Cascaded Convolutional Networks. IEEE SPL 2016.

### Competition paper

- Guo, Da, Kai Wang, Jianfei Yang, Kaipeng Zhang, Xiaojiang Peng, and Yu Qiao. Exploring Regularizations with Face, Body and Image Cues for Group Cohesion Prediction. ICMI 2019.
- Wang, Kai, Jianfei Yang, Da Guo, Kaipeng Zhang, Xiaojiang Peng, and Yu Qiao. Bootstrap model ensemble and rank loss for engagement intensity regression. ICMI 2019.
- Kaipeng Zhang, Ya-Liang Chang and Winston Hsu. Deep Disguised Faces Recognition. CVPRW 2018
- Kai Wang, Xiaoxing Zeng, Jianfei Yang, Debin Meng, Kaipeng Zhang, Xiaojiang Peng and Yu Qiao. Cascade Attention Networks for Group Emotion Recognition with Face, Body and Image Cues. ICMI 2018.
- Lianzhi Tan, Kaipeng Zhang, Kai Wang, Xiaoxing Zeng, Xiaojiang Peng and Yu Qiao. Group Emotion Recognition with Individual Facial Emotion CNNs and Global Image Based CNNs. ICMI 2017.
- Kaipeng Zhang, Lianzhi Tan, Zhifeng Li, Yu Qiao. Gender and Smile Classification using Deep Convolutional Neural Networks. CVPRW 2016.



### Google Scholar



### Github Projects

[ydwen/caffe-face](#)  
 Forked from BVLC/caffe  
 This branch is developed for deep face recognition

C++
1.2k
303

[MTCNN\\_face\\_detection\\_alignment](#)  
 Joint Face Detection and Alignment using Multi-task Cascaded Convolutional Networks

MATLAB
2.6k
1k



## Interest

|               |  |
|---------------|--|
| Traveling     |  |
| Reading       |  |
| Vlog          |  |
| Tabletop game |  |
| Ping-pong     |  |
| ACG           |  |
| Cooking       |  |



## Honors & Awards

### Competitions

#### As the main contributor

|   |                            |
|---|----------------------------|
| Disguised Faces in the Wild, CVPR                       | 1 <sup>st</sup> Place 2018 |
| (Awarded by IARP within ODNI 美国国家情报总监办公室)               |                            |
| Group Emotion Recognition, EmotiW, ICMI Grand Challenge | 1 <sup>st</sup> Place 2017 |
| Accessories Classification, ChaLearn LAP, CVPR          | 1 <sup>st</sup> Place 2016 |
| Smile and Gender Classification, ChaLearn LAP, CVPR     | 1 <sup>st</sup> Place 2016 |

#### As a co-contributor

|  |                            |
|--|----------------------------|
| Group Cohesion Prediction, EmotiW, ICMI Grand Challenge, | 2 <sup>nd</sup> Place 2019 |
| Engagement Prediction, EmotiW, ICMI Grand Challenge,     | 3 <sup>rd</sup> Place 2019 |
| Group Emotion Recognition, EmotiW, ICMI Grand Challenge, | 2 <sup>nd</sup> Place 2018 |

#### Others

|  |      |
|--|------|
| JSPS Research Fellowship for Young Scientists        | 2020 |
| Collaborative Research Program, UTokyo               | 2019 |
| Scholarships from Foundation's Support Fund, UTokyo  | 2019 |
| MSRA Fellowship Nomination Award                     | 2019 |
| Outstanding Undergraduate Thesis, Donghua University | 2016 |



## Academic Service

- Senior program committee member  
IJCAI
- Program committee member/Reviewer  
NeurIPS, ICML, ICLR, AAAI, ECCV, ICCV, CVPR, BMVC, ACCV, and WACV
- Reviewer  
TPAMI, TIP, TIFS, TNNLS, TCSVT, TMM, Neurocomputing, SPL, and PR