Curriculum Vitae

Wei-Hong LI

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Brief Biography

Mr. Wei-Hong Li is currently a PhD student in Prof. Hakan Bilen's team (The VICO Group) in the School of Informatics at the University of Edinburgh. My research focuses on computer vision and machine learning. Before Edinburgh, I have completed my master and bachelor supervised by Prof. Wei-Shi Zheng in the iSEE group at Sun Yat-sen University where I was working on Object Tracking, Person Re-identification and Important People Detection. It is a great time to work with Prof. Wei-Shi Zheng who thankfully introduced me to computer vision. During the master program, I was lucky to have a visiting study in the Vision Group at Queen Mary University of London where I focused on video search with Prof. Sean Gong.

Education

- **Sept 2018 – present,**

  PhD student at the University of Edinburgh (UK).

  Supervised by Prof. Hakan Bilen

- **Oct 2017 – March 2018,**

  Visiting student at Queen Mary University of London (UK).

  Supervised by Prof. Sean Gong and Prof. Wei-Shi Zheng

- **June 2015 – July 2018,**

  M.Sc. in School of Electronics and Information Technology at Sun Yat-sen University.

  Supervised by Prof. Wei-Shi Zheng.

- **September 2011 – June 2015, GPA 3.8/4.0,**

  B.Sc. in Intelligence Science and Technology, Sun Yat-sen University

  Thesis: **Tracking Multiple Targets in Group Activity Scene.**

  Supervised by Prof. Wei-Shi Zheng from January 2015 to May 2015.

Publication List

- **Wei-Hong Li**, Zhuowei Zhong, Wei-Shi Zheng, “One-pass Person Re-identification by Sketched Online Discriminant Analysis”. (In peer reviewed at *Pattern recognition*)
- **Wei-Hong Li**, Fa-Ting Hong, Wei-Shi Zheng, “Learning to Learn Relation for Important People Detection in Still Images.” In Proceedings of *International Conference on Computer Vision and Pattern Recognition, 2019.*
- **Wei-Hong Li**, Benchao Li, Wei-Shi Zheng, “PersonRank: Detecting Important People in Images”. Proceedings of *International Conference on Automatic Face and Gesture Recognition, 2018.* (Oral Paper)
- **Wei-Hong Li**, Yafang Mao, Ancong Wu, Wei-Shi Zheng. " Correlation based Identity Filter: An Efficient Framework For Person Search", Proceedings of *International Conference on Image and Graphics, 2017*. (Oral Paper, Best Paper Award)
- Yuting Mai, **Wei-Hong Li**, Yongyi Tang, Xixi Bi, Wei-Shi Zheng. "Sketch metric learning", Proceedings of *International Joint Conference on Neural Networks, 2016*.
- Zhaoyu Lu and Ziqi Luo and Huicheng Zheng and Jikai Chen and **Wei-Hong Li**. "A Delaunay-Based Temporal Coding Model for Micro-expression Recognition", Proceedings of *Asian Conference on Computer Vision, 2014*.

Project Experience

- **September 2018 - Present: PhD Student in the VICO Group at University of Edinburgh**

  • *Research Project on Learning Deep Feature Representation for Image-based Important People Detection via Relation Modeling (Work done while at Sun Yat-sen University)*

  - Goal: Humans can easily recognize the importance of people in social event images, and they always focus on the most important individuals. However, learning to learn the relation between people in an image, and inferring the most important person based on this relation, remains undeveloped. In this work, we propose a deep imPOrtance relatIon NeTwork (POINT) that combines both relation modeling and feature learning. In particular, we infer two types of interaction modules: the person-person interaction module that learns the interaction between people and the event-person interaction module that learns to describe how a person is involved in the event occurring in an image. We then estimate the importance relations among people from both interactions and encode the relation feature from the importance relations. In this way, POINT automatically learns several types of relation features in parallel and we aggregate these relation features and the person’s feature to form the importance feature for important people classification.
  - Results: One paper published at CVPR 2019

✧ **October 2017 – March 2018: Visiting Student in Computer Vision Group at Queen Mary University of London in the UK**

- *Royal Society Newton Advanced Fellowship Program on Person Re-Identification In-The-Wild*

  ▫ Goal: Video Person Search is to automatically identify a query person in surveillance videos , which has a vast quantity of practice application on computer-human interaction. Existing person re-id models focus on well selected data which makes these models unscalable to the real-world scenarios. Our aim is to design a deep learning framework for **video person search** in a realistic scenarios. In our context, our model will have an ability to avoid some hammed effects caused by failure of pedestrian detectors or multi-target trackers.

✧ **January 2015 – September 2017: Research Student in Intelligence Science and System Lab at Sun Yat-sen University**

- *Research Project on Online Person Re-identification*

  ▫ Goal: Existing person re-id models are dominated by offline learning algorithms. He aims at developing a succinct online person re-identification that can be trained on streaming data and high dimensional feature capture by computer human interaction system with high efficiency.

  ▫ Results:

  Our proposed method can approximate the performance of the offline method with extremely high speed.
  Rigorous theoretical analysis on how SoDA approximates the offline FDA was presented.
  A paper is under peer reviewed at PR.

- *Research Project on Image-based Important People Detection*

  ▫ Goal: Detecting important people in images is inherent challenging due to the existence of a great variety of variations on pose, action, appearance of persons and occasions. In this project, he proposed to detect important people in images automatically by analyzing interactions among persons, which estimated from different types of cues, including visual and spatial clues.

  ▫ Results:

  The PersonRank framework was developed for high accurate important people detection.
  Formed two large image-based dataset for important people detection.
  A paper is published at the FG 2018.

- *Research Project on Person Search for Surveillance System*

  ▫ Goal: Towards person re-identification in the wild, identifying the query person in whole gallery images instead of cropped bounding boxes. Existing methods are based on a simple two-stage search strategy. In order to search the query person in the wild and apply existing person re-id to computer human interaction, he developed an efficient person search framework that address pedestrian detection and re-identification simultaneously.

  ▫ Results:

  A Correlation Filter based framework for Person Search was proposed.
  A paper was accepted by ICIG 2017.
  Best paper award by ICIG 2017
  A patent is published: CN107085713A.

- *Research Project on Object Tracking*

- Goal: A sketch matrix learning method for object tracking.
- Results: A paper was accepted by IJCNN 2016.

✧ **November 2013 – November 2014: Undergraduate Student at Sun Yat-sen University**

- *National Innovation Project*
  - Program: Micro-expression Recognition
  - Results: A paper was accepted by ACCV workshop.
- *Robotic Vision Course for computer human interaction*

- Goal: Develop a computer vision algorithm to enable a robot, which senses surroundings through the camera on the smart phone, to detect obstacles (e.g., traffic cones in different color and manual bridge) and lines on the track, and to select the shortest path.
- Results:

  The robot is able to navigate fast and smoothly within the lines.
  He learnt some important computer vision models and tools (e.g., OpenCV).

Awards

✧ Student Fellowship for **visiting study** from the *Royal Society Advanced Newton Fellowship Program* and the *Natural Science Foundation of China*

✧ **Best Paper Award** by *International Conference on Image and Graphics, 2017*

✧ Five times Academic Excellence Award at Sun Yat-Sen University (twice in Master and three times in Bachelor)

✧ Twice second prize on *Chinese RoboCup Competition, 2014*

✧ The first prize on *Chinese RoboCup Competition, 2013*

Academic Activities

✧ Conference Attendance

- *Asian Conference on Computer Vision, Singapore, 2014*
- *Chinese Conference on Computer Vision, 2015*
- *International Conference on Image and Graphics, 2017*

Programming/Software/Operation System Skills

✧ Matlab programming, C++/Visual Studio, Python

✧ Deep learning tools, such as MatConvNet, Tensorflow (Google), Pytorch(Facebook).

✧ Linux (Centos, Ubuntu)

Teaching Experience/Language Skills

- ✧ Teaching Assistant
  - Sun Yat-sen University
    - ▫ Graphical Theory and Applications, March 2017 to July 2017. (Undergraduate Course)
  - University of Edinburgh
    - ▫ Image and Vision Computing, Sept. 2018 to Dec. 2018. (Master Course)
    - ▫ Machine Learning Practice, Sept. 2018 to Mar. 2019. (Master Course)
- ✧ Fitness trainer.
- ✧ Fluent in English. Native speaker of Chinese and Teochew dialect.

Hobbies

- ✧ Fitness. He is extremely enthusiastic about workout and has been fitness for four years. He enjoys challenging himself every training day and figure out the best training strategy as well as nutrition plan. With 4 years of experience, he is now an amateur bodybuilder and a fitness trainer. He is willing to help persons around him to be in shape.
- ✧ Playing badminton. He enjoys playing badminton every week.
- ✧ Gongfu Tea. He enjoys sharing tea with his family and friends.
- ✧ Reading. *Harry Potter* and *Children Take Your Time* are his favourite books.