Liu Li

Curriculum Vitae

Multimedia Communication Computing (MC^2) Lab
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Education

2017 – Now **M.S.**, *Electronic and Information Engineering*, Beihang University, Beijing, China.
GPA: 3.81/4
- Major: Information and Communication Engineering with supervisor, Prof. Mai Xu
- Research interests:
  - **Deep Learning**: Data Analysis, Deep Neural Network, Semi-supervised Learning
  - **Computing Vision**: Detection, Classification, Attention mechanism, Feature Visualization
  - **Medical Image Processing**: Image Processing, Imbalanced sample problem

2013 – 2017 **B.E.**, *Electronic and Information Engineering*, Beihang University, Beijing, China.
GPA: 3.71/4, Rank: 3%

Publications

[1] **Liu Li**, Mai Xu*, Xiaofei Wang, Lai Jiang, and Hanruo Liu, *"Attention Based Glaucoma Detection: A Large-scale Database and CNN Model"* in Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019. Accepted.

[2] **Liu Li**, Mai Xu*, Hanruo Liu, et al., *"A Large-scale Database and a CNN Model: Attention-based Glaucoma Detection"* in IEEE Transactions on Medical Image (**TMI**) (IF=7.82), 2019. Accepted.

[3] Xiaofei Wang, Mai Xu*, **Liu li** and Zulin Wang, *"Pathology-aware deep network visualization and its application in glaucoma image synthesis"* in Medical Image Computing and Computer Assisted Interventions (**MICCAI**), 2019. Accepted.

[4] Hanruo Liu, **Liu Li**, Ian Wormstone, et al., *"Establishing a Generalized Deep Learning System for Detection of Glaucomatous Optic Neuropathy using Fundus Photographs"* in **JAMA Ophthalmology** (IF=6.17), 2019. Minor changes.

[5] **Liu Li**, Mai Xu*, Xiaofei Wang, et al., *"Establishing a Generalized Deep Learning System for Detection of Glaucomatous Optic Neuropathy using Fundus Photographs"* submitted to Neural Information Processing Systems (**NeurIPS**), 2019. Review period.

Experience

Research Experience

2019 – Now **Dynamic Model for Disease Forecast**[5].
- Established a sequential fundus image database for glaucoma forecast
- Proposed a variable time interval CNN+LSTM model based on the sequential samples
- Introduced an active convergence training strategy for the imbalanced distribution problem

2018 – 2019 **Attention Mechanism-based Medical Image Detection and Visualization**[1][2].
- Proposed an attention-based CNN model for glaucoma detection, with hierarchical features
- Visualized the pathological regions on the fundus images by guided-bp method
- Embedded weakly supervised learning method motivated by the rotation invariance

2018 – 2019 **Pathology-aware deep network visualization**[3].
- Proposed a pathology-aware visualization approach for DNN-based glaucoma classification
- Synthesized glaucoma fundus images with GANs based on the visualization maps

2017 – 2018 **Generalized DNN System for Disease Classification**[4].
- Constructed and standardized a large-scale medical image database (200k fundus images)
- Developed a robust CNN method and achieved high accuracy (96%) in glaucoma detection
- Visualized the CNN temporally and spatially by feature embedding and feature occlusion
- Introduced online learning method for real application scenario

2016 – 2017 **Study on Multi-face Alignment Algorithm in Video**.
- Proposed a method of face alignment in video, based on the correlations between frames

Teaching Experience

2018 **Teacher Assistant**, "Image Signal Processing" for undergraduate student.

Social Experience

2017 – 2018 **Postgraduate Union**, Member of International Department.

2013 – 2015 **Cycling Association**, Vice Minister of Publicity Department.

2013 – 2014 **Beijing Aquarium**, Volunteer.

Scholarship

2017 – 2018 Academic Scholarship of Beihang University ***1st Prize***

National Innovation and Entrepreneurship Scholarship ***3rd Prize***

Directly *awarded by the National Ministry of Industry and Information*

2016 Academic Competition Scholarship of Beihang University ***1st Prize***

2015 Science and Technology Scholarship of Beihang University ***1st Prize***

Honors and Awards

2017 – 2018 Top Ten Student Cadres in the college *2 times*

2017 Outstanding Graduate of Beihang University

2016 Mathematical Contest in Modeling ***Meritorious Winner***

2015 National Undergraduate Electronics Design Contest, Beijing area ***1st Prize***

2015 "Lanqiao Cup" National Software and Information Technology Contest ***3rd Prize***

Sponsored by the National Ministry of Industry and Information

2014 "Fengru Cup" Academic Contest ***3rd Prize***

Top *innovation competition in Beihang University*

Skills

Programming: C, C++, Matlab, Python

Platform: Tensorflow, Caffe, Linux

Word processing: LaTeX, Microsoft Office, Adobe Illustrator

English: CET-6 568, IELTS 6.0