Yizhou WANG

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Education

2016–Present **Columbia University**, *Electrical Engineering Department*, New York, NY.
Master of Science (M.S.) in Electrical Engineering. GPA: 3.8/4.0.
Advised by: Professor Shih-Fu Chang and Professor Liangliang Cao.
Focus areas: Computer Vision, Deep Learning.

2012–2016 **Northwestern Polytechnical University (NPU)**, *Honors College*, Xi'an, China.
Bachelor of Engineering (B.E.) in Automation. GPA: 91/100 (top 5%).
Graduation Commencement Student Speaker at NPU. Honors List.
Outstanding Bachelor Thesis and Outstanding Graduates.
Outstanding Student and Principal Scholarship (top 0.2%).

Publications

WACV'18 **GIF Super-Resolution**, *In Submission*.
Yizhou Wang, Liangliang Cao. *IEEE Winter Conference on Applications of Computer Vision*. 2018.

NYCML'17 **Demo: Temporal Action Localization in Untrimmed Videos**.
Yizhou Wang, Zheng Shou, Shih-Fu Chang. *NYC Media Lab*. Sep 2017.

GNC'17 **A Multi-Objective Planning Method for Multi-Debris Active Removal Mission in LEO**.
Y. Liu, J. Yang, Y. HU, M. Zhao, **Y. Wang**, Q. Pan. *AIAA Guidance, Navigation, and Control Conference*. 2017.

SCICH'16 **Multi-objective optimal preliminary planning of multi-debris active removal mission in LEO**.
Y. Liu, J. Yang, **Y. Wang**, Q. Pan, J. Yuan. *SCIENCE CHINA Information Sciences*. 2016.

CGNCC'16 **Multi-objective optimal preliminary planning of multi-debris active removal mission in LEO**.
Y. Liu, J. Yang, **Y. Wang**, Q. Pan, J. Yuan. *IEEE Chinese Guidance, Navigation and Control Conference*. 2016.

UMAP'15 **How to Eradicate Ebola**.
Y. Wang, X. Yang, Y. Zhu, L. Wang. *The Journal of Undergraduate Mathematics and Its Applications*. 2015.

Research Experience

2017 **Fast GIF Super-Resolution (SR)**, *Columbia University*, New York, NY.
Advised by Professor Liangliang Cao.
- Collected a new large GIF SR dataset – "GIFSR" containing 1134 items and release it as a public benchmark.
- Proposed a fast algorithm for GIF SR based on Bicubic Interpolation and temporal operator optimization.
- PSNR results of our method on "GIFSR" outperformed some popular video SR baselines like VSRnet, while achieving at least 80 times speedup on CPU and reducing the file size by 70%.

2017 **Temporal action localization (TAL)**, *Digital Video and Multimedia Lab*, New York, NY.
Advised by Professor Shih-Fu Chang.
- Conducted research on TAL that: 1) Determining whether a video contains specific actions or activities; 2) Identifying temporal boundaries (start time and end time) of each action or activity instance.
- Solved TAL problem using deep learning methods including Segment-CNN and CDC Networks, and experimented on THUMOS'14 dataset which obtained per-frame mAP of 44.4 and TAL mAP of 40.1.
- Web development: Proposed a new method for TAL demonstration, developed a web-based visualization demo for Segment-CNN and CDC Networks, and presented the demo at NYC Media Lab'17.

2017 **Dict-Deep: Action Detection in Videos using Over-Complete Dictionary Learning**.
Advised by Professor John Wright.
- Proposed an sparse learning architecture named "Dict-Deep" for action detection using over-complete dictionary learning and deep neural networks, which includes three kinds of structures: Dict+SVM, Dict+MLP, Dict+RNN.
- Tested "Dict-Deep" on popular human action datasets including Weizmann and KTH, and obtained outperforming accuracy of 99.2% on Weizmann and 80.4% on KTH, while achieving a significant speedup comparing with SVM.

2017 **A Face Recognition Anti-Spoofing Approach**, *Ngineered Studio*, New York, NY.
Advised by Omar Kiyani.
- Extracted face image and scene image features using Shearlet Transform and Optical-Flow.
- Generated an Autoencoder Neural Network for face images classification and anti-spoofing.

2016 **SIFT Correspondence: Scene Alignment using Key-point Matching**.
Advised by Professor John Wright.
- Built a building image dataset named "CU-Building", including 500 training images and 100 test images.
- Proposed a building recognition method named "SIFT correspondence" based on SIFT key-point matching.
- Experimented "SIFT correspondence" on "CU-Buildings", and obtained test accuracy of 95%.

2016 **Sing-voice Separation from Monaural Recordings using Deep Recurrent Neural Networks**.
Advised by Professor Zoran Kostic.
- Implemented "sRNN + FC" and LSTM neural networks architectures for sing-voice separation problem
- Evaluated the performance of the models on MIR-1K dataset and obtained SDR of 6.73.

2013–2014 **Robotics and Applications**, *Robot Soccer Center, School of Computer Science, NPU*, Xi'an, China.
Advised by Associate Professor Haobin Shi.
- Conducted research on basic action control and optimization, ball prediction, and strategy design.
- Led a project entitled "Intelligence Robot Housekeeper". Built a robot intelligence system, and designed an indoor obstacle avoidance and route planning algorithm using indoor environment modeling.
- Performed as the team leader and won numerous awards in robotics competitions.

Teaching Experience

Spring 2017 **Teaching Assistant** at Columbia ELEN6886: Deep Learning for Computer Vision, Speech, and Language.
Instructed by: Professor Liangliang Cao, Xiaodong Cui and Kapil Thadani.

Honors and Awards

2016 Graduation Commencement Student Speaker at NPU
2016 Outstanding Bachelor Thesis and Outstanding Graduates at NPU
2016 CGNCC Best Paper Finalist Award
2015 MCM Outstanding Winner Award
2014&2015 National Scholarship (top 2%)
2014 Outstanding Student and Principal Scholarship at NPU (top 0.2%)
2014 The Champion in 2014 FIRA World Cup Simulation 5V5 Group
2014 The Champion in the 5th International Robots Olympic Competition FIRA 5V5 Group

Technical Skills

Programming Python, MATLAB, C, C++, Java, JavaScript, HTML, CSS
Data Analysis SQL, Hadoop, Hive, HBase, Mahout, Spark, IBM System G
Office LaTeX, MS Office, Adobe Photoshop, Adobe After Effects, SolidWorks