Tianyu Yang

18 Tat Hong Avenue, Kowloon
Hong Kong, China

tianyyang8-c@my.cityu.edu.hk
http://skyoung.github.io

Education

City University of Hong Kong
PhD in Computer Science — *Sep, 2015 – Present*

University of Chinese Academy of Sciences
Master in Electronic & Communications Engineering — *Sep, 2010 – Jul, 2013*

Liaocheng University
Bachelor in Communications Engineering — *Sep, 2006 – Jul, 2010*

Publications

- **Tianyu Yang**, Antoni B. Chan, "Learning Dynamic Memory Networks for Object Tracking", *arXiv Preprint*, 2018
- **Tianyu Yang**, Antoni B. Chan, "Recurrent Filter Learning for Visual Tracking", *Workshop on Visual Object Tracking (VOT) Chanllenge, ICCV 2017*
- Lei Yu, **Tianyu Yang**, Antoni B. Chan, "Approximate Inference for Generic Likelihoods via Density-Preserving GMM Simplification", *Workshop on Advances in Approximate Bayesian Inference, NIPS 2016*
- **Tianyu Yang**, Baopu Li, Max Q.-H. Meng, "Robust Object Tracking with Reacquisition Ability using Online Learned Detector", *IEEE Transactions on Cybernetics*, 2014
- **Tianyu Yang**, Baopu Li, Chao Hu, Max Q.-H. Meng, "Adaptive Visual Tracking with Reacquisition Ability for Arbitrary Objects", *IEEE International Conference on Robotics and Automation (ICRA)*, 2013

Patents

- Jingwen Li, **Tianyu Yang**, Yaojie Lu, Zhongchao Shi, Dianchao Liu, "Method, apparatus and system for motion estimation", CN106504265A, patent pending, China.
- **Tianyu Yang**, Yaojie Lu, Zhongchao Shi "Method and system for object tracking based on multiple classifier fusing", CN106204632A, patent pending, China.
- **Tianyu Yang**, Dianchao Liu, Yaojie Lu, Zhongchao Shi, Gang Wang, "Method and apparatus for object tracking", CN104915964B, China.
- **Tianyu Yang**, Baopu Li, Chao Hu, Max Q.-H. Meng, "An online learned object tracking method", CN103150572B, China.

Research Experiences

City University of Hong Kong — *Sep, 2015 – Present*l

Worked on improving object tracking performance with RNN as video sequences are spatiotemporal.

- Devised a dynamic memroy networks where the target information is stored and recalled from external addressable memory to maintain the variations of object appearance for template-matching.
- Proposed an end-to-end recurrent filter learning network where CNNs are used to exact features and a convolutional LSTM is applied to maintain the varaition of target's appearance when tracking
- Applied recursive Bayesian filtering where the posterior is represented as a Gaussian mixture model (GMM), and the likelihood function as a sum of scaled Gaussians (SSG) for object tracking.

Ricoh Software Research Center(Beijing) Co., Ltd. — *Jul, 2013 – Aug, 2015*l

Worked on visual odometry for Unmanned Aerial Vehicle (UAV) navigation and object tracking for Advanced Driver Assistance System (ADAS).

- Applied techniques including Harris/ORB/KAZE/SURF/SIFT keypoints detection, essential matrix estimation through RANSAC and bundle adjustment, to estimate the pose and translation of agent (UAV)
- Used Connected-Component Labeling(CCL) technique to detect potential obstacles or moving objects from disparity image and adopted Kanade-Lucas-Tomasi (KLT) method to form a sparse optical flow based tracker for object tracking.

Shenzhen Institutes of Advanced Technology, CAS *Sep, 2011 – June, 2013*l

Worked on visual tracking algorithms for intelligent household robots and optical measurement systems for navigating the surgical procedures.

- Applied online SVM to maintain the object's appearance information and Random Ferns as the conservative detector to redetect the target after drifting.
- Used techniques of pinhole camera model with a calibrated four-cameras system to track the reflective passive marker spheres on the scalpel, thus leading to a robust estimation of scalpel's position.

Skills

- **Programming** Python, C/C++, Matlab
- **Toolbox** Tensorflow, Pytorch

Selected Honors and Scholarships

- University Scholarship in 2006-2010;
- National Encouragement Scholarship(two students/one semester) in 2009;
- University-level Outstanding students in 2007.