Fan Yang

CONTACT INFORMATION

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RESEARCH INTERESTS

I work on both fundamental and practical computer vision and machine learning problems. My research interests include large-scale visual search, fine-grained classification, visual saliency detection, object localization/detection, image indexing/hashing, and deep learning, etc.

SKILLS

Languages: Python, C/C++, MATLAB
Tools: Caffe, Tensorflow, Keras, OpenCV, scikit-learn, Docker, Google Cloud

EDUCATION

University of Maryland, College Park — College Park, MD
Ph.D. in Computer Science — 08/2011 – 03/2016
Dissertation: Leveraging Multiple Features for Image Retrieval and Matching

Dalian University of Technology — Dalian, China
M.Eng in Signal and Information Processing — 08/2008 – 01/2011

China University of Mining and Technology — Xuzhou, China
B.Eng in Information Engineering — 08/2004 – 06/2008

EXPERIENCE

Software Engineer at **Google**, Sunnyvale, CA — 12/2018 – present
- Work on broad computer vision problems for Cloud Vision API and AutoML Vision

Research Scientist at **eBay Inc.**, San Jose, CA — 04/2016 – 12/2018
- Key contributor of visual search deployed in eBay Shopbot and Close5 that increased CTR by 100%
- Led research on fine-grained image recognition and object detection using deep neural networks
- Implemented and deployed production services on Google Cloud to support billions of listings on eBay
- Mentored interns to work on real-time visual saliency detection and generative adversarial networks

Research Assistant at **University of Maryland**, College Park, MD — 06/2012 – 03/2016
- Researched on compact representations by hashing for scalable video-based face verification
- Published various novel re-ranking algorithms for large-scale image retrieval
- Proposed attribute-based person re-identification by multi-task learning

Summer Research Assistant at **NEC Laboratories America**, Cupertino, CA — 05/2015 – 08/2015
- Implemented an efficient object detection algorithm using deep convolutional neural networks

Student Research Associate at **SRI International Sarnoff**, Princeton, NJ — 05/2014 – 08/2014
- Worked on multi-feature fusion by regression for logo retrieval

Research Intern at **SRI International Sarnoff**, Princeton, NJ — 07/2013 – 08/2013
- Researched on graph-based re-ranking algorithms for large-scale image retrieval

SELECTED PUBLICATIONS

[1] K. Lin, **F. Yang**, Q. Wang and R. Piramuthu. "Adversarial Learning for Fine-grained Image Search", IEEE International Conference on Multimedia and Expo (**ICME**), 2019. (**Oral**).

[2] S. Zheng, **F. Yang**, H. Kiapour and R. Piramuthu. "ModaNet: A Large-Scale Street Fashion Dataset with Polygon Annotations", ACM Multimedia Conference (**MM**), 2018. (**Oral**).

[3] M. Najibi, **F. Yang**, Q. Wang and R. Piramuthu. "Towards the Success Rate of One: Real-time Unconstrained Salient Object Detection", IEEE Winter Conference on Applications of Computer Vision (**WACV**), 2018.

[4] **F. Yang**, A. Kale, Y. Bubnov, L. Stein, Q. Wang, H. Kiapour and R. Piramuthu. "Visual Search at eBay", ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2017.

[5] C. Su*, **F. Yang***, S. Zhang, Q. Tian, L. S. Davis and W. Gao. "Multi-Task Learning with Low Rank Attribute Embedding for Multi-Camera Person Re-identification", IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2017. (*** indicates equal contribution**)

[6] C. Su, S. Zhang, **F. Yang**, G. Zhang, Q. Tian, W. Gao and L. S. Davis. "Attributes Driven Tracklet-to-tracklet Person Re-identification using Latent Prototypes Space Mapping", Pattern Recognition, 2017.

[7] **F. Yang**, W. Choi and Y. Lin. "Fast and Accurate CNN Object Detector with Scale Dependent Pooling and Cascaded Rejection Classifiers", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2016.

[8] C. Su*, **F. Yang***, S. Zhang, Q. Tian, L. S. Davis and W. Gao. "Multi-Task Learning with Low Rank Attribute Embedding for Person Re-identification", International Conference on Computer Vision (**ICCV**), 2015. (*** indicates equal contribution**)

[9] J. Y.-H. Ng, **F. Yang** and L. S. Davis. "Exploiting Local Features from Deep Networks for Image Retrieval", IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), DeepVision Workshop, 2015.

[10] **F. Yang**, B. Matei and L. S. Davis. "Re-ranking by Multi-feature Fusion with Diffusion for Image Retrieval", IEEE Winter Conference on Applications of Computer Vision (**WACV**), 2015.

[11] **F. Yang** and M. Bansal. "Feature Fusion by Similarity Regression for Logo Retrieval", IEEE Winter Conference on Applications of Computer Vision (**WACV**), 2015.

[12] **F. Yang**, Z. Jiang, L. S. Davis. "Submodular Reranking with Multiple Feature Modalities for Image Retrieval", Asian Conference on Computer Vision (**ACCV**), 2014. (**Oral**).

[13] **F. Yang**, Z. Jiang, L. S. Davis. "Online Discriminative Dictionary Learning for Visual Tracking", IEEE Winter Conference on Applications of Computer Vision (**WACV**), pp. 854-861, 2014.

[14] H. Lu, **F. Yang**. "Active Shape Model and Its Application to Face Alignment", Subspace Methods for Pattern Recognition in Intelligent Environment (Eds. Yen-Wei Chen and Lakhmi C. Jain), Studies in Computational Intelligence, Springer, vol. 552, pp. 1-31, 2014.

[15] **F. Yang**, H. Lu, M.-H. Yang, "Robust Superpixel Tracking", IEEE Transactions on Image Processing (**TIP**), vol. 23, no. 4, pp. 1639-1651, 2014.

[16] **F. Yang**, H. Lu, M.-H. Yang, "Robust Visual Tracking via Multiple Kernel Boosting with Affinity Constraints", IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**), vol. 24, no. 2, 242-254, 2014.

[17] **F. Yang**, H. Lu, M.-H. Yang, "Learning Structured Visual Dictionary for Object Tracking", Image and Vision Computing (**IVC**), vol. 31, no. 12, pp. 992-999, 2013.

[18] **F. Yang**, H. Lu, W. Zhang, Y.-W. Chen, "Visual Tracking via Bag of Features," IET Image Processing, vol. 6, no. 2, pp. 115-128, 2012. (2014 IET Premium Award)

[19] S. Wang, H. Lu, **F. Yang**, M.-H. Yang, "Superpixel Tracking", International Conference on Computer Vision (**ICCV**), pp. 1323-1330, 2011.

[20] **F. Yang**, H. Lu, Y.-W. Chen, "Human Tracking by Multiple Kernel Boosting with Locality Affinity Constraints," Asian Conference on Computer Vision (**ACCV**), vol. 4, pp. 39-50, 2010.

[21] **F. Yang**, H. Lu, Y.-W. Chen, "Robust Tracking Based on Boosted Color Soft Segmentation and ICA-R," International Conference on Image Processing (**ICIP**), pp.3917-3920, 2010.

[22] **F. Yang**, H. Lu, Y.-W. Chen, "Bag of Features Tracking," 20th International Conference on Pattern Recognition (**ICPR**), pp. 153-156, 2010. (**Oral**).

Patents

Granted Patents

- Determining an item that has confirmed characteristics

Pending Patents

- Image analysis and prediction based visual search — filed 10/2016
- Intelligent online personal assistant with offline visual search database — filed 10/2016
- Intelligent online personal assistant with multi-turn dialog based on visual search — filed 10/2016
- Cascaded neural network with scale dependent pooling for object detection — filed 11/2016
- Anchored search — filed 12/2016
- Saliency-based object counting and localization — filed 03/2017
- Camera platform and object inventory control — filed 09/2017
- Camera platform incorporating schedule and stature — filed 12/2017
- Adversarial learning for fine-grained image search — filed 05/2018

Invited Talks

- Visual Search at eBay — 03/2018
  NVIDIA GPU Technology Conference, San Jose, CA
- Real-time Unconstrained Salient Object Detection — 08/2017
  eBay Amplify Conference, San Jose, CA

Honors & Awards

Spot Award for Patent Application	2018
Honorable Mention Award at eBay Innovation Expo	2017
Dean's Fellowship	2011-2013
National Scholarship	2007

Professional Activities

Conference Reviewer or Program Committee Member

International Conference on Computer Vision (ICCV), 2019
ACM Multimedia, 2014, 2017, 2018
IEEE Conference on Automatic Face and Gesture Recognition (FG), 2018
European Conference on Computer Vision (ECCV), 2014
IEEE Winter Conference on Applications of Computer Vision (WACV), 2015-2019

Journal Reviewer

International Journal of Computer Vision (IJCV)
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
IEEE Transactions on Image Processing (TIP)
IEEE Transactions on Multimedia (TMM)
IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
IEEE Transactions on Systems, Man, and Cybernetics (SMC)
IEEE Transactions on Cybernetics
IEEE Signal Processing Letters
IEEE Access
Neurocomputing
IET Image Processing
SPIE Optical Engineering
SPIE Journal of Electronic Imaging
SPIE Journal of Medical Imaging

Proposal Reviewer

Czech Science Foundation, 2018

Interns Mentored

Mahyar Najibi, University of Maryland, College Park, Summer 2016
Kevin Lin, University of Washington, Summer 2017