XIAODONG YANG

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WORK EXPERIENCE

10/2019-present	Head of Machine Learning, QCraft	*Santa Clara, CA*
05/2015-09/2019	Senior Research Scientist, NVIDIA Research	*Santa Clara, CA*
06/2014-08/2014	Research Intern, Xerox PARC	*Webster, NY*
06/2013-08/2013	Research Intern, AT&T Labs Research	*Middletown, NJ*

EDUCATION

08/2009-04/2015	The City University of New York Ph.D. in Electrical Engineering	*New York, NY*
09/2005-07/2009	Huazhong University of Science and Technology B.Eng. in Biomedical Engineering	*Wuhan, China*

RESEARCH INTERESTS

Computer vision, machine learning, autonomous driving (perception, prediction, automated labeling and data mining), image and video understanding, activity recognition and detection, learning with incomplete supervision, deep generative modeling, etc.

PUBLICATIONS

Zeyu Wang[†], Dingwen Li, Chenxu Luo, Cihang Xie, **Xiaodong Yang**. "DistillBEV: Boosting Multi-Camera 3D Object Detection with Cross-Modal Knowledge Distillation". IEEE International Conference on Computer Vision (ICCV), 2023.

Xiaodong Yang, Zhuang Ma, Zhiyu Ji, Zhe Ren. "GEDepth: Ground Embedding for Monocular Depth Estimation". IEEE International Conference on Computer Vision (ICCV), 2023.

Weixin Li, **Xiaodong Yang**. "Transcendental Idealism of Planner: Evaluating Perception from Planning Perspective for Autonomous Driving". International Conference on Machine Learning (ICML), 2023.

Xishun Wang, Tong Su, Fang Da, **Xiaodong Yang**. "ProphNet: Efficient Agent-Centric Motion Forecasting with Anchor-Informed Proposals". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023 (Highlight).

Jinyu Li[†], Chenxu Luo, **Xiaodong Yang**. "PillarNeXt: Rethinking Network Designs for 3D Object Detection in LiDAR Point Clouds". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023.

Yue Yao, Liang Zheng, **Xiaodong Yang**, Milind Napthade, Tom Gedeon. "Attribute Descent: Simulating Object-Centric Datasets on the Content Level and Beyond". IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2023.

[†] Co-authors are my interns.

Guilin Liu, Aysegul Dundar, Kevin Shih, Ting-Chun Wang, Fitsum Reda, Karan Sapra, Zhiding Yu, **Xiaodong Yang**, Andrew Tao, Bryan Catanzaro. "Partial Convolution for Padding, Inpainting, and Image Synthesis". IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2022.

Chenxu Luo[†], **Xiaodong Yang**, Alan Yuille. "Exploring Simple 3D Multi-Object Tracking for Autonomous Driving". IEEE International Conference in Computer Vision (ICCV), 2021.

Chenxu Luo[†], **Xiaodong Yang**, Alan Yuille. "Self-Supervised Pillar Motion Learning for Autonomous Driving". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021.

Xitong Yang[†], **Xiaodong Yang**, Sifei Liu, Deqing Sun, Larry Davis, Jan Kautz. "Hierarchical Contrastive Motion Learning for Video Action Recognition". British Machine Vision Conference (BMVC), 2021 (Oral).

Yang Zou[†], **Xiaodong Yang**, Zhiding Yu, Vijaya Kumar, Jan Kautz. "Joint Disentangling and Adaptation for Cross-Domain Person Re-Identification". European Conference on Computer Vision (ECCV), 2020 (Oral).

Tanmay Gupta[†], Arash Vahdat, Gal Chechik, **Xiaodong Yang**, Jan Kautz, Derek Hoiem. "Contrastive Learning for Weakly Supervised Phrase Grounding". European Conference on Computer Vision (ECCV), 2020 (Spotlight).

Yue Yao, Liang Zheng, **Xiaodong Yang**, Milind Naphade, Tom Gedeon."Simulating Content Consistent Vehicle Datasets with Attribute Descent". European Conference on Computer Vision (ECCV), 2020.

Jason Ren[†], Zhiding Yu, **Xiaodong Yang**, Ming-Yu Liu, Alexander Schwing, Jan Kautz. "UFO^2: A Unified Framework towards Omni-supervised Object Detection". European Conference on Computer Vision (ECCV), 2020.

Jason Ren[†], Zhiding Yu, **Xiaodong Yang**, Ming-Yu Liu, Yong Jae Lee, Alexander Schwing, Jan Kautz. "Instance-Aware, Context-Focused, and Memory-Efficient Weakly Supervised Object Detection". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020.

Zhedong Zheng[†], **Xiaodong Yang**, Zhiding Yu, Liang Zheng, Yi Yang, Jan Kautz. "Joint Discriminative and Generative Learning for Person Re-Identification". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019 (Oral).

Xitong Yang[†], **Xiaodong Yang**, Ming-Yu Liu, Fanyi Xiao, Larry Davis, Jan Kautz. "STEP: Spatio-Temporal Progressive Learning for Video Action Detection". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019 (Oral).

Zheng Tang, Milind Naphade, Ming-Yu Liu, **Xiaodong Yang**, Stan Birchfield, Shuo Wang, Ratnesh Kumar, David Anastasiu, Jenq-Neng Hwang. "CityFlow: A City-Scale Benchmark for Multi-Target Multi-Camera Vehicle Tracking and Re-Identification". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019 (Oral).

James Lee[†], **Xiaodong Yang**, Ming-Yu Liu, Ting-Chun Wang, Yu-Ding Lu, Ming-Hsuan Yang, Jan Kautz. "Dancing to Music". Neural Information Processing Systems (NeurIPS), 2019.

Huizi Mao[†], **Xiaodong Yang**, William Dally. "A Delay Metric for Video Object Detection: What Average Precision Fails to Tell". IEEE International Conference in Computer Vision (ICCV), 2019.

Zheng Tang, Milind Naphade, Stan Birchfield, Jonathan Tremblay, William Hodge, Ratnesh Kumar, Shuo Wang, **Xiaodong Yang**. "PAMTRI: Pose-Aware Multi-Task Learning for Vehicle Re-Identification Using Randomized Synthetic Data". IEEE International Conference in Computer Vision (ICCV), 2019.

Deqing Sun, **Xiaodong Yang**, Ming-Yu Liu, Jan Kautz. "Models Matter, So Does Training: An Empirical Study of CNNs for Optical Flow Estimation". IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2019.

Behrooz Mahasseni[†], **Xiaodong Yang**, Pavlo Molchanov, Jan Kautz. "Budget-Aware Activity Detection with A Recurrent Policy Network". British Machine Vision Conference (BMVC), 2018 (Oral).

Sergey Tulyakov[†], Ming-Yu Liu, **Xiaodong Yang**, Jan Kautz. "MoCoGAN: Decomposing Motion and Content for Video Generation". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.

Deqing Sun, **Xiaodong Yang**, Ming-Yu Liu, Jan Kautz. "PWC-Net: CNNs for Optical Flow using Pyramid, Warping and Cost Volume". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (Oral).

Xiaodong Yang, Pavlo Molchanov, Jan Kautz. "Making Convolutional Networks Recurrent for Visual Sequence Learning". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.

Longlong Jing, Yuancheng Ye, **Xiaodong Yang**, Ying-Li Tian. "3D Convolutional Neural Network with Multi-Model Framework for Action Recognition". IEEE International Conference on Image Processing (ICIP), 2017 (Oral).

Yang Xian, Xuejian Rong, **Xiaodong Yang**, Ying-Li Tian. "Evaluation of Low-Level Features for Real-World Surveillance Event Detection". IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), 2017.

Jinwei Gu, **Xiaodong Yang**, Shalini De Mello, Jan Kautz. "Dynamic Facial Analysis: From Bayesian Filtering to Recurrent Neural Network". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017.

Xiaodong Yang, Ying-Li Tian. "Super Normal Vector for Human Activity Recognition with Depth Cameras". IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2017.

Xiaodong Yang, Pavlo Molchanov, Jan Kautz. "Multilayer and Multimodal Fusion of Deep Neural Networks for Video Classification". ACM Multimedia, 2016 (Oral).

Pavlo Molchanov, **Xiaodong Yang**, Shalini Gupta, Kihwan Kim, Stephen Tyree, Jan Kautz. "Online Detection and Classification of Dynamic Hand Gestures with Recurrent 3D Convolutional Neural Networks". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016.

Shalini Gupta, Pavlo Molchanov, **Xiaodong Yang**, Kihwan Kim, Stephen Tyree, Jan Kautz. "Towards Selecting Robust Hand Gestures for Automotive Interfaces". IEEE Intelligent Vehicles Symposium (IV), 2016.

Yuancheng Ye, Xuejian Rong, **Xiaodong Yang**, Ying-Li Tian. "Region Trajectories for Video Semantic Concept Detection". ACM International Conference on Multimedia Retrieval (ICMR), 2016.

Yuancheng Ye, **Xiaodong Yang**, Ying-Li Tian. "Exploring Pooling Strategies based on Idiosyncrasies of Spatio-Temporal Interest Points". ACM International Conference on Multimedia Retrieval (ICMR), 2015.

Shizhi Chen, **Xiaodong Yang**, Ying-Li Tian. "Discriminative Hierarchical K-Means Tree for Large-Scale Image Classification". IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2015.

Xiaodong Yang, Ying-Li Tian. "Super Normal Vector for Activity Recognition Using Depth Sequences". IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2014.

Xiaodong Yang, Ying-Li Tian. "Action Recognition Using Super Sparse Coding Vector with Spatio-Temporal Awareness". European Conference on Computer Vision (ECCV), 2014.

Xiaodong Yang, Shuai Yuan, Ying-Li Tian. "Assistive Clothing Pattern Recognition for Visually Impaired People". IEEE Transactions on Human-Machine Systems (THMS), 2014.

Xiaodong Yang, Ying-Li Tian. "Effective 3D Action Recognition Using EigenJoints". Journal of Visual Communication and Image Representation (JVCI), 2014 (Best Paper Runner-Up Award).

Chenyang Zhang, **Xiaodong Yang**, Ying-Li Tian. "Histogram of 3D Facets: A Characteristic Descriptor for Hand Gesture Recognition". IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2013 (Oral).

Ying-Li Tian, **Xiaodong Yang**, Chucai Yi, Aries Arditi. "Toward A Computer Vision based Wayfinding Aid for Blind Persons to Access Unfamiliar Indoor Environments". Machine Vision and Applications (MVA), 2013.

Xiaodong Yang, Ying-Li Tian. "Texture Representations Using Subspace Embeddings". Pattern Recognition Letters (PRL), 2013.

Xiaodong Yang, Zhu Liu, Eric Zavesky, David Gibbon, Behzad Shahraray, Ying-Li Tian. "AT&T Research at TRECVID 2013: Surveillance Event Detection". NIST TREC Video Retrieval Evaluation (TRECVID), 2013.

Xiaodong Yang, Chucai Yi, Liangliang Cao, Ying-Li Tian. "MediaCCNY at TRECVID 2012: Surveillance Event Detection". NIST TREC Video Retrieval Evaluation (TRECVID), 2012.

Xiaodong Yang, Ying-Li Tian. "EigenJoints based Action Recognition Using Naive-Bayes-Nearest-Neighbor". IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRW), 2012.

Faiz Zaman, **Xiaodong Yang**, Ying-Li Tian. "Robust and Effective Component based Banknote Recognition for the Blind". IEEE Transactions on System, Man, and Cybernetics (TSMC) Part C, 2012.

Xiaodong Yang, Chenyang Zhang, Ying-Li Tian. "Recognizing Actions Using Depth Motion Maps based Histograms of Oriented Gradients". ACM Multimedia, 2012.

Xiaodong Yang, Shuai Yuan, Ying-Li Tian. "Recognizing Clothes Patterns for Blind People by Confidence Margin based Feature Combination". ACM Multimedia, 2011.

Xiaodong Yang, Ying-Li Tian, Chucai Yi, Aries Arditi. "Robust Door Detection in Unfamiliar Environments by Combining Edge and Corner Features". ACM Multimedia, 2010.

Xiaodong Yang, Ying-Li Tian. "Context based Indoor Object Detection as an Aid to Blind Persons Accessing Unfamiliar Environments". IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRW), 2010.

PATENTS

Jayant Kumar, **Xiaodong Yang**, Qun Li, Raja Bala, Edgar Bernal, Jeyasri Subramanian. "Dynamic Hand Gesture based Region of Interest Localization". US9354711 issued on 2016/05/31.

Jayant Kumar, **Xiaodong Yang**, Qun Li, Edgar Bernal, Raja Bala. "Hand Gesture based Region of Interest Localization". US9778750 issued on 2017/10/03.

Pavlo Molchanov, **Xiaodong Yang**, Shalini De Mello, Kihwan Kim, Stephen Tyree, Jan Kautz. "Online Detection and Classification of Dynamic Gestures with Recurrent Convolutional Neural Networks". US10157309 issued on 2018/12/18.

Jinwei Gu, **Xiaodong Yang**, Shalini De Mello, Jan Kautz. "Systems and Methods for Dynamic Facial Analysis Using A Recurrent Neural Network". US10373332 issued on 2019/08/06.

Xiaodong Yang, Pavlo Molchanov, Jan Kautz. "Fusing Multilayer and Multimodal Deep Neural Networks for Video Classification". US10402697 issued on 2019/09/03.

Deqing Sun, **Xiaodong Yang**, Ming-Yu Liu, Jan Kautz. "System and Method for Optical Flow Estimation". US10424069 issued on 2019/09/24.

Deqing Sun, **Xiaodong Yang**, Ming-Yu Liu, Jan Kautz. "System and Method for Optical Flow Estimation". US10467763 issued on 2019/11/05.

Ming-Yu Liu, **Xiaodong Yang**, Jan Kautz, Sergey Tulyakov. "System and Method for Content and Motion Controlled Action Video Generation". US10595039 issued on 2020/03/17.

Xiaodong Yang, Pavlo Molchanov, Jan Kautz, Behrooz Mahasseni. "Budget-Aware Method for Detecting Activity in Video". US10860859 issued on 2020/12/08.

Xiaodong Yang, Xitong Yang, Fanyi Xiao, Ming-Yu Liu, Jan Kautz. "Iterative Spatio-Temporal Action Detection in Video". US11017556 issued on 2021/05/25.

Xiaodong Yang, Pavlo Molchanov, Jan Kautz. "Transforming Convolutional Neural Networks for Visual Sequence Learning". US11049018 issued on 2021/06/29.

Xiaodong Yang, Yang Zou, Zhiding Yu, Jan Kautz. "Cross-Domain Image Processing for Object Re-Identification". US11367268 issued on 2022/06/21.

Xiaodong Yang, Xitong Yang, Sifei Liu, Jan Kautz. "Self-Supervised Hierarchical Motion Learning for Video Action Recognition". US11594006 issued on 2023/02/28.

Xiaodong Yang, Zhedong Zheng, Zhiding Yu. "Image Identification Using Neural Networks". US Patent Application 16/357047, 2019.

Zhiding Yu, Jason Ren, **Xiaodong Yang**, Ming-Yu Liu, Jan Kautz. "Weakly-Supervised Object Detection Using One or More Neural Networks". US Patent Application 16/443346, 2019.

Milind Naphade, Tingting Huang, Shuo Wang, **Xiaodong Yang**, Ming-Yu Liu. "Neural Architecture for Self-Supervised Event Learning and Anomaly Detection". US Patent Application 16/453913, 2019.

Arash Vahdat, Tanmay Gupta, **Xiaodong Yang**, Jan Kautz. "Joint Representation Learning from Images and Text". US Patent Application 17/000048, 2020.

Xiaodong Yang. "Method and Apparatus for Generating Interactive Scenario, and Electronic Device". US Patent Application 17/032726, 2020.

Xiaodong Yang, Chenxu Luo. "Method and System for Self-Supervised Learning of Pillar Motion for Autonomous Driving". US Patent Application 17/231271, 2022.

Xiaodong Yang, Chenxu Luo. "System and Method for 3D Multi-Object Tracking in LiDAR Point Clouds". US Patent Application 17/395626, 2023.

PROFESSIONAL SERVICE

Organizer: AI City Challenge Workshop at CVPR 2019, 2020, 2021, Tutorial at GPU Technology Conference (GTC) 2019

Invited Talk: Carnegie Mellon University, Peking University, Tsinghua University, CAS Institute of Computing Technology, CAS Institute of Automation, CAS Institute of Information Engineering

Program Committee and Reviewer: CVPR, ICCV, ECCV, NeurIPS, ICLR, ICML, SIGGRAPH, SIG-GRAPH Asia, BMVC, FG, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), International Journal of Computer Vision (IJCV), and many more.

HONORS AND AWARDS

Winner Honorable Mention on CVPR Argoverse Motion Forecasting Challenge, 2022

AI2000 Most Influential Scholar Honorable Mention by AMiner, 2020

CVPR Outstanding Reviewer, 2019

NVIDIA Pioneer Award, 2018

Winner on CVPR Robust Vision Optical Flow Challenge, 2018

Best Paper Runner-Up Award, Journal of Visual Communication and Image Representation, 2015

Winner on TRECVID Surveillance Event Detection, 2013

ACM Multimedia Student Grant Award, 2011

MENTORSHIP

Mu Cai, University of Wisconsin-Madison, 2022

Zeyu Wang, University of California, Santa Cruz, 2022

Chenxu Luo, Johns Hopkins University, 2021 & 2020

Zhiyu Ji, University of Wisconsin-Madison, 2020

Longlong Jing, City University of New York, 2020

Yang Zou, Carnegie Mellon University, 2019

Xitong Yang, University of Maryland, College Park, 2019 & 2018

Tanmay Gupta, University of Illinois at Urbana-Champaign, 2019
(co-advised with Arash Vahdat)

Yue Yao, Australian National University, 2019

Huizi Mao, Stanford University, 2019

Jason Ren, University of Illinois at Urbana-Champaign, 2019 & 2018
(co-advised with Zhiding Yu)

Zhedong Zheng, University of Technology Sydney, 2018

James Lee, University of California, Merced, 2018

Chuhang Zou, University of Illinois at Urbana-Champaign, 2018
(co-advised with Jinwei Gu)

Sergey Tulyakov, University of Trento, 2017
(co-advised with Ming-Yu Liu)

Fanyi Xiao, University of California, Davis, 2017

Behrooz Mahasseni, Oregon State University, 2016