Curriculum Vitae

Xuefeng Du

University of Wisconsin-Madison
Department of CS

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EDUCATION

University of Wisconsin-Madison, **Department of Computer Sciences**   Madison, WI, USA
Ph.D. in Computer Science, Advisor: Sharon Yixuan Li.   Jan. 2021-Now
- Overall GPA: **(4.0/4.0).**
- **Research Interest: Open-world object detection.**
- Work on out of distribution detection in object detection networks.

Xi'an Jiaotong University (XJTU), School of Electronic and Information Engineering   Xi'an, China
B.Eng. in Automation Science and Technology   Sept. 2016 – Jun. 2020
- Overall GPA: **91.6/100(3.83/4.0)**, Rank: **1st/170**, Major GPA: **93.04/100(3.91/4.0),** Rank: **3rd/170**
- **Selected awards**：National Scholarship (Twice, top 1% in China)

RESEARCH EXPERIENCE

Google Research, Google Inc.   Sunnyvale, CA, USA
Student Researcher, Hosts: Dr. Zizhao Zhang, Ting Chen and Han Zhang   June 2022 – Sept. 2022
Open-vocabulary object detection with language models
- Work on exploiting language models on open-vocabulary object detection.
- Design a new general framework for prompt-based object detection transformers.

Machine Learning Center, Tencent AI Lab.   Shenzhen, China
Research Intern, Supervised by Dr. Yu Rong and Junzhou Huang   Mar. 2021 – June 2021
Pairwise Interactions for robust graph neural networks against noisy labels
- Work on exploiting pairwise interactions in graph neural network's training to combat noisy labels for semi-supervised node classification.
- Submit one paper on semi-supervised node classification against noisy labels.

Department of Computer Science, Hong Kong Baptist University.   Hong Kong
Research Assistant, Supervised by Dr. Bo Han   Oct. 2020 – Jan. 2021
Effective Network Architecture for Adversarial Robustness
- Work on learning a diverse network architecture to improve adversarial robustness.
- Submit one paper to ICML and get accepted.

AI Lab, Bytedance Inc.   Beijing, China
Research Engineer Intern, Supervised by Dr. Changhu Wang   Aug. 2020 -Sept. 2020
Fine-grained image classification
- Exploit pretraining techniques for fine-grained image classification.
- Design effective fine-grained image classification models for deployment on the product line.

AI Theory Group, Noah's Ark Lab, Huawei Inc.   Shenzhen, China
Research Intern, Supervised by Hang Xu and Zhenguo Li   Dec. 2019 -July 2020
Hybrid Supervised Panoptic Segmentation
- Propose a new Hybrid Supervised Panoptic Segmentation (HSPS) framework to significantly reduce the annotation cost for the most complex panoptic segmentation task. HSPS fully utilizes

various kinds of weak supervision in the dataset, i.e., image labels, boxes and also semantic coherence between the *thing* and *stuff* branch, which achieves a 41.7% *Panoptic Quality* via 30% fully annotated data.

- Submit one paper to AAAI and get accepted.

Department of Machine Learning, Carnegie Mellon University   Pittsburgh, PA, USA
Student Intern, Supervised by Haohan Wang and Professor, Eric. Xing   April 2019 – Nov. 2019
Robust Machine Learning on Adversarial Attacks
- Propose two simple and effective intuitions to improve adversarial training. Apply One-Vs-All (OVA) models to improve adversarial training, which naturally allows the perturbation bound to be different for different classes.
- Propose a conditional adversarial training method that gradually improves the perturbation bound until no perturbed adversarial examples are considered valid.

Department of Computational Biology, Carnegie Mellon University   Pittsburgh, PA, USA
Student Intern, Supervised by Assistant Research Professor, Min Xu   July 2018 – Feb. 2020
Deep Learning for Cellular Electron Cryo-Tomography (CECT)
- Work on domain-specific problems in CECT, such as open-set novel macromolecule detection and recognition and label-efficient sub-tomogram classification.
- Submit four papers and get accepted.

Intelligent Networks and Network Security Lab, XJTU   Xi'an, China
Research Assistant, Supervised by Professor, Pinghui Wang   Nov. 2018 – Jun. 2020
Network Embedding and Meta Learning
- Propose a novel setting in network embedding: Node classification with Few-shot Novel labels.
- Integrate Meta-Learning flavored few-shot learning with classic network embedding techniques, such as DeepWalk and LINE to jointly learn the structure and classification information in graphs.
- Help submit one paper to NeurIPS and get accepted.

Institute of Automatic Control, XJTU   Xi'an, China
Research Assistant, Supervised by Associate Professor, Dexing Zhong   Jun. 2017 - Apr. 2019
Machine Learning Powered Hand-based Biometrics
- Explore deep-learning based methods in hand-based biometrics, such as continual learning, adversarial domain adaptation for domain-specific problems.
- Help submit four papers.

Papers and preprints on ML
- **Xuefeng Du**, Gabriel Gozum, Yifei Ming, Yixuan Li**,** SIREN: Shaping Representations for Detecting Out-of-distribution Objects, Neural Information Processing Systems (NeurIPS), 2022
- **Xuefeng Du**, Xin Wang, Gabriel Gozum, Yixuan Li, "Unknown-Aware Object Detection: Learning What You Don't Know from Videos in the Wild", *CVPR 2022,* **oral***.*
- **Xuefeng Du**, Eric Wang, Mu Cai, Yixuan Li , "VOS: Learning What You Don't Know by Virtual Outliers Synthesis", *ICLR 2022.*
- **Xuefeng Du**, Jingfeng Zhang, Bo Han, Tongliang Liu, Yu Rong, Gang Niu, Junzhou Huang, Masashi Sugiyama , "Learning Diverse-Structured Networks for Adversarial Robustness", *ICML 2021.*
- Lin Lan, Pinghui Wang, **Xuefeng Du,** Kaikai Song, Jing Tao, Xiaohong Guan, "Node Classification on Graphs with Few-Shot Novel Labels via Meta Transformed Network Embedding", in *NeurIPS 2020.*
- Pengtao Xie, **Xuefeng Du**, "Performance-Aware Mutual Knowledge Distillation for Improving Neural Architecture Search", *CVPR 2022.*
- **Xuefeng Du,** Chenhan Jiang, Hang Xu, Gengwei Zhang, Zhenguo Li, "How to save your annotation cost for Panoptic Segmentation?", in *AAAI 2021.*
- Jingkang Yang, Pengyun Wang, Dejian Zou, Zitang Zhou, Kunyuan Ding, Wenxuan Peng, Haoqi

Wang, Guangyao Chen, Bo Li, Yiyou Sun, **Xuefeng Du**, Kaiyang Zhou, Wayne Zhang, Dan Hendrycks, Yixuan Li, Ziwei Liu, OpenOOD: Benchmarking Generalized Out-of-Distribution Detection, Neural Information Processing Systems (NeurIPS), Datasets and Benchmarks Track, 2022.

- **Xuefeng Du**, Pengtao Xie, "Learning by Passing Tests, with Application to Neural Architecture Search", *arXiv preprint arXiv:2011.15102*.
- Pengtao Xie, **Xuefeng Du**, Hao Ban, "Skillearn: Machine Learning Inspired by Humans' Learning Skills", *arXiv preprint arXiv:2012.04863.*
- **Xuefeng Du**, Pengtao Xie , "Small-Group Learning, with Application to Neural Architecture Search", *arXiv preprint arXiv:2012.12502*
- **Xuefeng Du**, Tian Bian, Yu Rong, Bo Han, Tongliang Liu, Tingyang Xu, Wenbing Huang, Junzhou Huang , "PI-GNN: A Novel Perspective on Semi-Supervised Node Classification against Noisy Labels", *arXiv preprint arXiv:2106.07451*

Papers on Bioinformatics
- Dexing Zhong, **Xuefeng Du**, and Kuncai Zhong, "Decade progress of palmprint recognition: a brief survey", *Neurocomputing*, 2018, vol. 328, pp.16-28. **(IF 4.072)**
- Huikai Shao, Dexing Zhong and **Xuefeng Du**, "Efficient Deep Palmprint Recognition via Distilled Hashing Coding", in *CVPR Workshops 2019*.
- Dexing Zhong, Huikai Shao and **Xuefeng Du,** "A Hand-based Multi-biometrics via Deep Hashing Network and Biometric Graph Matching", in *IEEE Transactions on Information Forensics and Security. (TIFS)*, vol.14, issue.12, pp. 3140 - 3150. **(IF 6.211)**
- **Xuefeng Du**, Xiangrui Zeng, Bo Zhou, Alex Singh and Min Xu, "Open-set Recognition of Unseen Macromolecules in Cellular Electron Cryo-Tomograms by Soft Large Margin Centralized Cosine Loss", in *British Machine Vision Conference (BMVC)*, 2019, **Spotlight**.
- Siyuan Liu, **Xuefeng Du**, Rong Xi, Fuya Xu, Xiangrui Zeng, Bo Zhou and Min Xu, "Semi-supervised Macromolecule Structural Classification in Cellular Electron Cryo-Tomograms using 3D Autoencoding Classifier", in *British Machine Vision Conference (BMVC)*, 2019, Poster.
- Ilja Gubins, Gijs van der Schot, Remco C Veltkamp, Friedrich Förster, **Xuefeng Du**, Xiangrui Zeng, Zhenxi Zhu, Lufan Chang, Min Xu, Emmanuel Moebel, Antonio Martinez-Sanchez, Charles Kervrann, Tuan M Lai, Xusi Han, Genki Terashi, Daisuke Kihara, Benjamin A Himes, Xiaohua Wan, Jingrong Zhang, Shan Gao, Yu Hao, Zhilong Lv, Xiaohua Wan, Zhidong Yang, Zijun Ding, Xuefeng Cui, Fa Zhang, "Classification in Cryo-Electron Tomograms", in *Eurographics 2019*.
- **Xuefeng Du,** Dexing Zhong, Huikai Shao, "Cross-domain palmprint recognition based on adversarial domain adaptative hashing", in *IEEE Transactions on Circuits and Systems for Video Technology*, 2020.
- **Xuefeng Du,** Haohan Wang, Zhenxi Zhu, Xiangrui Zeng, Yi-Wei Chang, Jing Zhang, Eric Xing, Min Xu, "Active learning to classify macromolecular structures in situ for less supervision in cryo-electron tomography", *Bioinformatics*, 2021.

SERVICE
- Reviewer for ICML, NeurIPS, ICLR , TCSVT, TIP, MICCAI.

ADDITIONAL INFORMATION
- **Language skills**：Native speakers of Mandarin with fluent English speaking capability (CET4: 633, CET6: 627, TOEFL: 106 (S22), GRE: 160+166+4.5)
- **Programming skills:** Proficient with Python, TensorFlow, PyTorch. Familiar with C, Matlab, C++.