Weizhi Li

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EDUCATION

Arizona State University, Tempe, AZ **Aug 2022**
Doctor of Philosophy in Computer Engineering GPA: 3.8 /4.0
Texas A&M University, College Station, TX **Dec 2017**
Master of Science in Electrical Engineering GPA: 3.7/4.0
Shandong University, P.R. China **June 2015**
Bachelor of Engineering in Electronic Information Science and Technology Major GPA: 85 /100

SKILLS

Machine learning Active learning, statistical learning, biomedical image segmentation
Programming Python, C++, Matlab
Libraries Tensorflow, PyTorch

PROFESSIONAL EXPERIENCE

Research Scientist, Full-time | Meta **Sep 2022 - Current**

- I mainly work with the Ads team to refactor infrastructure code and research an efficient use of neural architecture search.

Machine Learning Engineer, Full-time Intern | Facebook **May - Aug 2021**

➢ **Project: Transferable Semantic Augmentation for Domain Adaptation**

- Used a **transfer learning** technique to address the **Ads signal loss** caused by privacy protection in mobile phones.
- Applied **semantic data augmentation** for data in the source domain to generate extra data that incorporates semantic knowledge about the data in the target domain.
- Observed **0.21% normalized entropy gain** over baselines.

ACADEMIC PROJECTS

A Label-efficient two-sample test [code] **2021-2022**

- Developed a **novel A/B test under** a setting where **group memberships (group A or B) are unknown**.
- Spent **5x fewer membership queries** than the baseline to test the correlation between a biomarker and clinical endpoints using an Alzheimer`s disease dataset.
- One paper accepted by a **tier 1 conference UAI2022.**

Finding the homology of decision boundaries with active learning [code] **2019-2020**

- Applied a **graph algorithm called S2** based on the **binary search** to **efficiently find edges** that connect nodes of different labels in a graph.
- Extracted **persistence diagrams** (a sort of homology feature) for decision boundaries from labeled data.
- Applied the algorithm to **model selection** to select a model that **best matches the extracted persistence diagrams**. Experimental results on MNIST and CIFAR show a 10% relative accuracy gain.
- One paper accepted by a **tier 1 conference NeurIPS2020**.

Structural label smoothing for deep model regularization **2018-2019**

- Designed a novel label smoothing method called structural label smoothing (SLS) of which the **smoothing strengths are data dependent**.
- Carefully selected the smoothing strengths to **reduce a negative effect called Bayes error rate bias** brought by the traditional label smoothing.
- Observed **2% accuracy gain** for experiments on CIFAR10, CIFAR-100, and SVHN.
- One paper accepted by a **tier 1 conference AISTATS2020**.

Multi-view 3D object detection network for autonomous driving [code] **Jul-Aug 2017**

- Processed raw **LIDAR point cloud** and prepared it for model training
- Built an object detection deep network called MV3D with Tensorflow. This is a deep network composed of two subnetworks to receive the LIDAR and RGB image data.

Noise-tolerant deep learning for image segmentation **2016-2017**

- Developed a deep network **resistant to label-noise for histo-image segmentation**.
- Treated the output of the **last hidden layer of a model as clean labels** and the **model output as noisy labels** and use **the expectation-maximization (EM) algorithm** to infer the clean labels from the noisy labels.
- Used the proposed network to segment **muscular dystrophy cells** in histo-images.
- One paper accepted by ICIP2017.

Publications

Li, Weizhi, Gautam Dasarathy, Karthikeyan Natesan Ramamurthy, and Visar Berisha. "A label efficient two-sample test." In Uncertainty in Artificial Intelligence, pp. 1168-1177. PMLR, 2022.

Li, Weizhi, Gautam Dasarathy, Karthikeyan Natesan Ramamurthy, and Visar Berisha. "Finding the homology of decision boundaries with active learning." Advances in Neural Information Processing Systems 33 (2020): 8355-8365.

Li, Weizhi, Gautam Dasarathy, and Visar Berisha. "Regularization via structural label smoothing." In International Conference on Artificial Intelligence and Statistics, pp. 1453-1463. PMLR, 2020.

Tsai, Chung-Chi, **Weizhi Li**, Kuang-Jui Hsu, Xiaoning Qian, and Yen-Yu Lin. "Image co-saliency detection and co-segmentation via progressive joint optimization." IEEE Transactions on Image Processing 28, no. 1 (2018): 56-71.

Li, Weizhi, Xiaoning Qian, and Jim Ji. "Noise-tolerant deep learning for histopathological image segmentation." In 2017 IEEE International Conference on Image Processing (ICIP), pp. 3075-3079. IEEE, 2017.

Wang, Liping, Xiao Zhou, Chengyou Wang, and **Weizhi Li**. "The effects of image dehazing methods using dehazing contrast-enhancement filters on image compression." KSII Transactions on Internet and Information Systems (TIIS) 10, no. 7 (2016): 3245-3271.

HONORS

Graduate Travel Award from Arizona State University	**2020**
Engineering Graduate Fellowship from Arizona State University	**2018,2019**
Winner of the Research Poster Competition in SWE region C conference	**Mar 2017**
Graduate Merit Scholarship from Texas A&M University	**Aug 2016**
Shandong University 3rd-class Scholarship	**Oct 2014**

SERVICES

Graduate Fulton Ambassadors at Arizona State University	**2020-2021**

Reviewer for NeurIPS, ICML, AAAI, Transactions on Information Theory, etc.