Beibin Li

Curriculum Vitae

(Updated March. 2022)
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Education

2022 **Ph.D.**, *Computer Science & Engineering*, University of Washington, Advisors: Linda Shapiro and Frederick Shic.
Thesis: Low-Resource Neural Adaptation: A Unified Data Adaptation Framework for Neural Networks

2015 **Bachelor of Science**, *Double Major Computer Science and Mathematics*, University of Michigan, Ann Arbor.

Experience

2022 **Senior Research Engineer**, *Microsoft Research*, Cloud Operation Research.
Advisor: Ishai Menache
Optimizing supply chain and virtual machine allocation methods, I aim to integrate modern deep learning methods, such as model pre-training, reinforcement learning, active learning, and variational inference, to combinatorial optimization problems in data centers and Azure services.

2021 **Research Intern**, *Google*, Health AI.
Host: Ashish Bora, Pinal Bavishi
Create computer vision and artificial intelligence models to predict progression of vision loss based on diabetic retinopathy images.

2020 **Research Intern**, *Microsoft Research*.
Advisor: Yao Lu, Srikanth Kandula
Solve dataset shift problem by active learning, interactive learning, and generative methods. Apply machine learning and deep learning to improve database systems, including cardinality estimation, query optimization, and index tuning.

2015–2017 **Research Associate**, *Seattle Children's; Yale University*.
Advisor: Frederick Shic
Create deep learning systems for image and video analysis. Design eye-tracking experiments, develop fixation identification algorithm, and conduct data analysis. Communicate with collaborating sites to troubleshoot eye-tracking experiments in a NIH R01 multi-site project.

Awards

2017-2018 Faithful Steward Endowed Fellowship, University of Washington

2015-2017 Translational Technologies Fellowship, Yale University

2013–2015 University Honors, University of Michigan

Publications

2022 **Li, B.**; Snider, JC; Wang, Q.; Mehta, S.; Foster, C.; Barney, E.; Shapiro, L.; Ventola, P.; Shic, F.. Calibration Error Prediction: Ensuring High-Quality Mobile Eye-Tracking In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research and Applications.* ACM. (ACM ETRA 2022).

2022 Shic, F.; Naples, A. J.; Barney, E. C.; Chang, S. A.; **Li, B.**; McAllister, T.; ...; McPartland, J. C.. The autism biomarkers consortium for clinical trials: evaluation of a battery of candidate eye-tracking biomarkers for use in autism clinical trials *Molecular Autism.*

2022 **Li, B.**; Lu, Y.; Wang, C.; Kandula, S.. Warper: Efficiently Adapting Learned Cardinality Estimators to Data and Workload Drifts *2022 ACM Management of Data (SIGMOD).*

2021 Zhu, G.; Wang, J.; Xiao, L.; Yang, K.; Huang, K.; **Li, B**.; Huang, S.; Xiao, B.; Liu, D.; Feng,L.; Wang, Q.. Memory Deficit in Patients with Temporal Lobe Epilepsy: Evidence from Eye Tracking Technology *Frontiers in Neuroscience.* 2021

2021 **Li, B.**; Lu, Y.; Wang, C.; Kandula, S.. Cardinality Estimation: Is Machine Learning a Silver Bullet? *The 3rd International Workshop on Applied AI for Database Systems and Applications (AIDB).*

2021 **Li, B.**; Lu, Y.; Wang, C.; Kandula, S.. Q-error Bounds of Random Uniform Sampling for Cardinality Estimation. `https://arxiv.org/abs/2108.02715`

2021 **Li, B.**; Nuchterlein, N.; Barney, E.; Foster, C.; Kim, M.; Mahony, M.; Atyabi, A.; Feng, L.; Wang, Q.; Ventola, P.; Shapiro, L.; Shic, F.. Learning Oculomotor Behaviors from Scanpath. *Proceedings of the 2021 International Conference on Multimodal Interaction (ICMI).*

2021 Liu, K.; Mokhtari, M.; **Li, B.**; Nofallah, S.; May, C.; Chang, O.; Knezevich, Stevan.; Elmore, J.; Shapiro, L. Learning Melanocytic Proliferation Segmentation in Histopathology Images from Imperfect Annotations. In *2021 Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR).*

2021 Nuechterlein, N.; **Li, B.**; Feroze, A.; Holland, E; Shapiro, L; Haynor, D.; Fink, J. & Cimino, P. Applying a Radiogenomic Approach to Predict Clinically-relevant Genome-wide Molecular Signatures in Glioblastoma. Neuro-Oncology Advances.

2021 Shic, F.; Naples, A.; Barney, E.; Chang, S.; **Li, B.**; McAllister, T.; Kim, M.; Hasselmo, S.; Atyabi, A.; Wang, Q.; Hellemann, G.; Levin, A.; Seow, H.; Bernier, R.; Chawarska, K.; Dawson, G.; Dziura, J.; Faja, S.; Jeste, S.; Johnson, S.; Murias, M.; Nelson, C.; Sabatos-DeVito, M.; Senturk, D.; Sugar, C.; Webb, S. & McPartland, J. The Autism Biomarkers Consortium for Clinical Trials: Evaluation of a Battery of Candidate Eye Tracking Biomarkers for Use in Autism Clinical Trials. *In Review.*

2020 **Li, B.**; Mercan, E.; Mehta, S.; Knezevich, S.; Arnold, C.; Weaver, D.; Elmore, J. & Shapiro, L. Classifying Breast Histopathology Images with a Ductal Instance-Oriented Pipeline. In *2020 25th International Conference on Pattern Recognition. IEEE.*

2020 Nuechterlein, N.; **Li, B.**; Seyfioglu, M.; Mehta, S.; Cimino, P. & Shapiro, L. Leveraging Unlabeled Data for Glioma Molecular Subtype and Survival Prediction. In *2020 25th International Conference on Pattern Recognition. IEEE.*

2020 **Li, B.**; Barney, E.; Hudac, C.; Nuechterlein, N.; Ventola, P.; Shapiro, L.; Shic, F. Selection of Eye-Tracking Stimuli for Prediction by Sparsely Grouped Input Variables for Neural Networks: towards Biomarker Refinement for Autism. In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research and Applications.* ACM. (ACM ETRA 2020).

2020 Wu, W., **Li, B.**, Ezgi, M., Mehta, S., Bartlett, J., Weaver, D., Elmore, J., & Shapiro, L. MLCD: A Unified Software Package for Cancer Diagnosis. In *Journal of Clinical Oncology.* 2020

2019 **Li, B.**, Nuechterlein, N., Barney, E., Hudac, C., Ventola, P., Shapiro, L., & Shic, F. Sparsely Grouped Input Variables for Neural Networks. 2019

2019 **Li, B.**, Mehta, S., Aneja, D., Foster, C., Ventola, P., Shic, F., & Shapiro, L. A Facial Affect Analysis System for Autism Spectrum Disorder. In *Proceedings of the IEEE International Conference on Image Processing (ICIP).* 2019

2018 **Li, B.**, Atyabi, A., Kim, M., Barney, E., Ahn, A., Luo, Y., Aubertine, M., Corrigan, S., John, T., Wang, Q., Mademtzi, M., Best, M., & Shic, F. Social Influences on Executive Functioning in Autism: Design of a Mobile Gaming Platform. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* 2018

2017 Atyabi, A., **Li, B.**, Ahn, A., Kim, M., Barney, E., & Shic, F. An Exploratory Analysis Targeting Diagnostic Classification of AAC App Usage Patterns. In *IEEE International Joint Conference on Neural Networks (IJCNN 2017)*

2016 Wang, Q, , Barney, E., Wall, C., Dinicola, L., Foster, C., Ahn, Y., **Li, B.**, & Shic, F. Hybrid Calibration for Eye Tracking: Smooth Pursuit Trajectory with Anchor Points. In *Journal of Vision 16(12):1355. September 2016*

2016 Boccanfuso, L., Wang, Q., Leite, I., **Li, B.**, Torres, C., Chen, L., Salomons, N., Foster, C., Barney, E., Ahn, Y., Scassellati, B., & Shic, F.. A Thermal Emotion Classifier for Improved Human-Robot Interaction. In *IEEE International Symposium on Robot and Human Interactive Communication 2016 (RO-MAN 2016).*

2016 **Li, B.**, Boccanfuso, L., Wang, Q., & Shic, F.. Human Robot Activity Classification based on Accelerometer and Gyroscope. In *IEEE International Symposium on Robot and Human Interactive Communication 2016 (RO-MAN 2016).*

2016 Wang, Q., Boccanfuso, L., **Li, B.**, Ahn, A. Y. J., Foster, C. E., Orr, M. P., ... & Shic, F. (2016, March). Thermographic eye tracking. In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research & Applications* (pp. 307-310). ACM.

2016 **Li, B.**, Wang, Q., Barney, E., Hart, L., Wall, C., Chawarska, K., ... & Shic, F. (2016, March). Modified DBSCAN algorithm on oculomotor fixation identification. In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research & Applications* (pp. 337-338). ACM.

2016 **Li, B.**, Wang, Q., Boccanfuso, L., & Shic, F. (2016, March). Optimality of the distance dispersion fixation identification algorithm. In *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research & Applications* (pp. 339-340). ACM.

Academic Service

2022 **Committee Member**. ACM Symposium on Eye Tracking Research & Applications

2021 **Reviewer**. Machine Learning in Computational Biology (NeurIPS)

2019, 2020 **Reviewer**. ACM SIGCHI Conference on Human Factors in Computing Systems

2018, 2020 **Reviewer**. ACM Symposium on Eye Tracking Research & Applications

Teaching

2021 CSE 577, TA, Advanced Computer Vision: Medical Imaging.

2020 CSE 599, TA, AI and the Brain.

2020 CSE 455, TA, Computer Vision.

2019 CSE 473, TA, Intro to Artificial Intelligence.

2018 CSE 546, TA, Machine Learning.

2015 EECS 376, TA, Theory of Computation