

Beibin Li

Curriculum Vitae

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Experience

- 2022 – Now **Senior Research Engineer**, *Microsoft Research*, Cloud Operation Research.
Advisor: Ishai Menache
Focused on optimizing supply chain and virtual machine allocation methods by integrating state-of-the-art deep learning techniques.
🏆 2023 MLSys Outstanding Paper Award: VM Allocation with Lifetime Prediction
🚀 Azure Supply Chain Co-Pilot: LLM for Supply Chain Optimization
🤖 AutoGen: Enabling Next-Gen LLM Applications via Multi-Agent Conversation
- 2021 **Research Intern**, *Google*, Health AI.
Hosts: Ashish Bora, Pinal Bavishi
Developed computer vision and artificial intelligence models aimed at predicting the progression of vision loss using diabetic retinopathy images.
- 2020 **Research Intern**, *Microsoft Research*.
Advisor: Yao Lu, Srikanth Kandula
Solving the dataset shift problem by leveraging active learning, interactive learning, and generative methods. Applied to cardinality estimation and query optimization.
- 2015 – 2017 **Research Associate**, *Seattle Children's; Yale University*.
Advisor: Frederick Shic
Developed deep learning systems specialized for image and video analysis. Designed eye-tracking experiments, created a fixation identification algorithm, and conducted extensive data analysis.

Education

- 2022 **Ph.D.**, *Computer Science and Engineering*, University of Washington, Seattle,
Advisors: Linda Shapiro and Frederick Shic.
🎓 Low-Resource Neural Adaptation: A Unified Data Adaptation Framework for Neural Networks
- 2015 **Bachelor of Science**, *Double Major: Computer Science, Mathematics*,
University of Michigan, Ann Arbor.

Publications

Atyabi, A., Boccanfuso, L., Snider, J., Kim, M., Barney, E., Ahn, Y. A., Li, B., Dommer, K. J., & Shic, F. (2023). Large-scale investigations of aac usage patterns: Trends, autism, and stacked autoencoders. *2023 IEEE 13th Annual Computing and Communication Workshop and Conference (CCWC)*, 851–859.

Atyabi, A., Shic, F., Jiang, J., Foster, C. E., Barney, E., Kim, M., Li, B., Ventola, P., & Chen, C. H. (2023). Stratification of children with autism spectrum disorder through fusion of temporal

information in eye-gaze scan-paths. *ACM Transactions on Knowledge Discovery from Data*, 17(2), 1–20.

Barbalho, H., Kovalski, P., Li, B., Marshall, L., Molinaro, M., Pan, A., Cortez, E., Leao, M., Patwari, H., Tang, Z., et al. (2023). Virtual machine allocation with lifetime predictions. *Proceedings of Machine Learning and Systems*, 5.

Dong, M., Telesca, D., Sugar, C., Shic, F., Naples, A., Johnson, S. P., Li, B., Atyabi, A., Xie, M., Webb, S. J., et al. (2023). A functional model for studying common trends across trial time in eye tracking experiments. *Statistics in biosciences*, 15(1), 261–287.

Hochhauser, M., Dommer, K. J., Atyabi, A., Li, B., Ahn, Y. A., Aubertine, M., Kim, M., Corrigan, S. G., Pelphrey, K. A., & Shic, F. (2023). Comparing attention to biological motion in autism across age groups using eye-tracking. *Proceedings of the 2023 Symposium on Eye Tracking Research and Applications*, 1–3.

Li, B., Mellou, K., Zhang, B., Pathuri, J., & Menache, I. (2023). Large language models for supply chain optimization. *arXiv preprint arXiv:2307.03875*.

Liu, K., Li, B., Wu, W., May, C., Chang, O., Knezevich, S., Reisch, L., Elmore, J., & Shapiro, L. (2023). Vsgd-net: Virtual staining guided melanocyte detection on histopathological images. *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision*, 1918–1927.

Liu, R. P., Mellou, K., Gong, X.-Y., Li, B., Coffee, T., Pathuri, J., Simchi-Levi, D., & Menache, I. (2023). Efficient cloud server deployment under demand uncertainty. *Available at SSRN 4501810*.

Sajal, S. M., Marshall, L., Li, B., Zhou, S., Pan, A., Mellou, K., Narayanan, D., Zhu, T., Dion, D., Moscibroda, T., et al. (2023). Kerveros: Efficient and scalable cloud admission control. *17th USENIX Symposium on Operating Systems Design and Implementation (OSDI 23)*, 227–245.

Shic, F., Dommer, K., Benton, J., Li, B., Snider, J. C., Nyström, P., & Falck-Ytter, T. (2023). Remote, tablet-based assessment of gaze following: A nationwide infant twin study.

Wu, Q., Bansal, G., Zhang, J., Wu, Y., Zhang, S., Zhu, E., Li, B., Jiang, L., Zhang, X., & Wang, C. (2023). Autogen: Enabling next-gen llm applications via multi-agent conversation framework. *arXiv preprint arXiv:2308.08155*.

Xiao, L., Zhu, G., Huang, K., Wen, S., Feng, L., Li, B., Xiao, B., Liu, D., & Wang, Q. (2023). Memory characteristics in mesial temporal lobe epilepsy: Insights from an eye tracking memory game and neuropsychological assessments. *CNS Neuroscience & Therapeutics*.

Li, B., Lu, Y., & Kandula, S. (2022). Warper: Efficiently adapting learned cardinality estimators to data and workload drifts. *Proceedings of the 2022 International Conference on Management of Data*, 1920–1933.

Li, B., Snider, J. C., Wang, Q., Mehta, S., Foster, C., Barney, E., Shapiro, L., Ventola, P., & Shic, F. (2022). Calibration error prediction: Ensuring high-quality mobile eye-tracking. *2022 Symposium on Eye Tracking Research and Applications*, 1–7.

Marathe, K., Marasinou, C., Li, B., Nakhaei, N., Li, B., Elmore, J. G., Shapiro, L., & Hsu, W. (2022). Automated quantitative assessment of amorphous calcifications: Towards improved malignancy risk stratification. *Computers in biology and medicine*, 146, 105504.

- Nofallah, S., Li, B., Mokhtari, M., Wu, W., Knezevich, S., May, C. J., Chang, O. H., Elmore, J. G., & Shapiro, L. G. (2022). Improving the diagnosis of skin biopsies using tissue segmentation. *Diagnostics*, 12(7), 1713.
- Nuechterlein, N., Li, B., Shapiro, L., Cimino, P., & Holland, E. (2022). Genome-wide somatic copy number alteration signatures have prognostic implications for adult astrocytic glioma. *NEURO-ONCOLOGY*, 24, 9–10.
- Shic, F., Naples, A. J., Barney, E. C., Chang, S. A., Li, B., McAllister, T., Kim, M., Dommer, K. J., Hasselmo, S., Atyabi, A., et al. (2022). The autism biomarkers consortium for clinical trials: Evaluation of a battery of candidate eye-tracking biomarkers for use in autism clinical trials. *Molecular Autism*, 13(1), 1–17.
- Li, B., Lu, Y., Wang, C., & Kandula, S. (2021a). Cardinality estimation: Is machine learning a silver bullet. *3rd International Workshop on Applied AI for Database Systems and Applications (AIDB)*.
- Li, B., Lu, Y., Wang, C., & Kandula, S. (2021b). Q-error bounds of random uniform sampling for cardinality estimation. *arXiv preprint arXiv:2108.02715*.
- Li, B., Mercan, E., Mehta, S., Knezevich, S., Arnold, C. W., Weaver, D. L., Elmore, J. G., & Shapiro, L. G. (2021). Classifying breast histopathology images with a ductal instance-oriented pipeline. *2020 25th International Conference on Pattern Recognition (ICPR)*, 8727–8734.
- Li, B., Nuechterlein, N., Barney, E., Foster, C., Kim, M., Mahony, M., Atyabi, A., Feng, L., Wang, Q., Ventola, P., et al. (2021). Learning oculomotor behaviors from scanpath. *Proceedings of the 2021 International Conference on Multimodal Interaction*, 407–415.
- Liu, K., Mokhtari, M., Li, B., Nofallah, S., May, C., Chang, O., Knezevich, S., Elmore, J., & Shapiro, L. (2021). Learning melanocytic proliferation segmentation in histopathology images from imperfect annotations. *Proceedings of the IEEE/CVF conference on computer vision and pattern recognition*, 3766–3775.
- Mehta, S., Nuechterlein, N., Mercan, E., Li, B., Nofallah, S., Wu, W., Lu, X., Caspi, A., Rastegari, M., Elmore, J., et al. (2021). Applications of the espnet architecture in medical imaging. In *State of the art in neural networks and their applications* (pp. 117–131). Elsevier.
- Nuechterlein, N., Li, B., Feroze, A., Holland, E. C., Shapiro, L., Haynor, D., Fink, J., & Cimino, P. J. (2021). Radiogenomic modeling predicts survival-associated prognostic groups in glioblastoma. *Neuro-oncology Advances*, 3(1), vdab004.
- Nuechterlein, N., Li, B., Seyfioğlu, M. S., Mehta, S., Cimino, P. J., & Shapiro, L. (2021). Leveraging unlabeled data for glioma molecular subtype and survival prediction. *2020 25th International Conference on Pattern Recognition (ICPR)*, 7149–7156.
- Wang, H., Li, B., Shic, F., Hu, B., & Wang, Q. (2021). Comparing robustness and efficiency of closed eye detection in images. *2021 6th International Conference on Image, Vision and Computing (ICIVC)*, 6–12.
- Zhu, G., Wang, J., Xiao, L., Yang, K., Huang, K., Li, B., Huang, S., Hu, B., Xiao, B., Liu, D., et al. (2021). Memory deficit in patients with temporal lobe epilepsy: Evidence from eye tracking technology. *Frontiers in Neuroscience*, 15, 716476.

- Jas, M., Achakulvisut, T., Idrizović, A., Acuna, D., Antalek, M., Marques, V., Odland, T., Garg, R. P., Agrawal, M., Umegaki, Y., et al. (2020). Pyglmnet: Python implementation of elastic-net regularized generalized linear models. *Journal of Open Source Software*, 5(47).
- Li, B., Barney, E., Hudac, C., Nuechterlein, N., Ventola, P., Shapiro, L., & Shic, F. (2020). Selection of eye-tracking stimuli for prediction by sparsely grouped input variables for neural networks: Towards biomarker refinement for autism. *ACM Symposium on Eye Tracking Research and Applications*, 1–8.
- Nuechterlein, N., Li, B., Fink, J., Haynor, D., Holland, E., Shapiro, L., & Cimino, P. (2020). Nimg-46. radiogenomic features predict clinically relevant genome-wide alteration signatures in glioblastoma. *Neuro-Oncology*, 22(Suppl 2), ii158.
- Webb, S. J., Shic, F., Murias, M., Sugar, C. A., Naples, A. J., Barney, E., Borland, H., Hellemann, G., Johnson, S., Kim, M., et al. (2020). Biomarker acquisition and quality control for multi-site studies: The autism biomarkers consortium for clinical trials. *Frontiers in Integrative Neuroscience*, 13, 71.
- Wu, W., Li, B., Mercan, E., Mehta, S., Bartlett, J., Weaver, D. L., Elmore, J. G., & Shapiro, L. G. (2020). Mlcd: A unified software package for cancer diagnosis. *JCO clinical cancer informatics*, 4, 290–298.
- Li, B., Mehta, S., Aneja, D., Foster, C., Ventola, P., Shic, F., & Shapiro, L. (2019). A facial affect analysis system for autism spectrum disorder. *2019 IEEE International Conference on Image Processing (ICIP)*, 4549–4553.
- Li, B., Nuechterlein, N., Barney, E., Hudac, C., Ventola, P., Shapiro, L., & Shic, F. (2019). Sparsely grouped input variables for neural networks. *arXiv preprint arXiv:1911.13068*.
- Li, B., Atyabi, A., Kim, M., Barney, E., Ahn, A. Y., Luo, Y., Aubertine, M., Corrigan, S., St. John, T., Wang, Q., et al. (2018). Social influences on executive functioning in autism: Design of a mobile gaming platform. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–13.
- Atyabi, A., Li, B., Ahn, Y. A., Kim, M., Barney, E., & Shic, F. (2017). An exploratory analysis targeting diagnostic classification of aac app usage patterns. *2017 International Joint Conference on Neural Networks (IJCNN)*, 1633–1640.
- Boccanfuso, L., Wang, Q., Leite, I., Li, B., Torres, C., Chen, L., Salomons, N., Foster, C., Barney, E., Ahn, Y. A., et al. (2016). A thermal emotion classifier for improved human-robot interaction. *2016 25th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, 718–723.
- Li, B., Boccanfuso, L., Wang, Q., Barney, E., Ahn, Y. A., Foster, C., Chawarska, K., Scassellati, B., & Shic, F. (2016). Human robot activity classification based on accelerometer and gyroscope. *2016 25th IEEE international symposium on robot and human interactive communication (RO-MAN)*. Presented at the 2016 25th IEEE international symposium on robot and human interactive communication (RO-MAN), 423–424.
- Li, B., Wang, Q., Barney, E., Hart, L., Wall, C., Chawarska, K., de Urabain, I. S., Smith, T. J., & Shic, F. (2016). Modified dbscan algorithm on oculomotor fixation identification. *Proceedings of the Ninth Biennial ACM Symposium on Eye Tracking Research & Applications*, 337–338.

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

Wang, Q., Barney, E., Wall, C., DiNicola, L., Foster, C., Ahn, Y., Li, B., Katarzyna, C., & Shic, F. (2016). Hybrid calibration for eye tracking: Smooth pursuit trajectory with anchor points. *Journal of Vision*, 16(12), 1355–1355.

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

Li, B., Boccanfuso, L., Valencia, S., Scassellati, B., & Shic, F. (2015). Background music and sound effects in human-robot interaction.

Academic Service

- 2022, 2023 **Committee Member**. ACM Symposium on Eye Tracking Research & Applications
- 2021, 2022 **Reviewer**. Computers in Biology and Medicine, Journal
- 2021 **Reviewer**. Mathematical Biosciences and Engineering, Journal
- 2021 **Reviewer**. Machine Learning in Computational Biology (NeurIPS)
- 2020 **Reviewer**. ACM European Conference on Information Systems (ECIS)
- 2020 **Reviewer**. International Conference on Mobile, Hybrid, and On-line Learning
- 2019, 2020, 2023 **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

Awards

- 2017-2018 Faithful Steward Endowed Fellowship, University of Washington
- 2015-2017 Translational Technologies Fellowship, Yale University
- 2013–2015 University Honors, University of Michigan