

XINHUI LI

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EDUCATION

Georgia Institute of Technology , Atlanta, Georgia, US Ph.D., Bioengineering (Electrical and Computer Engineering)	Aug 2021 - Exp. May 2025
University of Pennsylvania , Coursera M.S., Computer and Information Technology (GPA: 4.0/4.0)	May 2019 - Aug 2021
Columbia University , New York, NY, US M.S., Biomedical Engineering (GPA: 4.0/4.3)	Aug 2017 - Feb 2019
Xiamen University , Xiamen, FJ, CN B.S., Pharmaceutical Science (GPA: 3.6/4.0)	Aug 2013 - Jul 2017
Utrecht University , Utrecht, UT, NL Exchange Student, Economics and Humanities	Feb 2016 - Jun 2016

RESEARCH INTERESTS

Brain Computer Interaction, Machine Learning, Image Analysis, Neuroimaging Software Development

PROFESSIONAL EXPERIENCE

Assistant Research Engineer Jun 2019 - Aug 2021

Computational Neuroimaging Lab, Child Mind Institute, New York, NY, US

Advisors: Michael P. Milham, Steven Giavasis, Ting Xu

- Developing the software Configurable Pipeline for the Analysis of Connectomes (C-PAC) for MRI processing and analysis; maintaining C-PAC pipeline configuration GUI and user documentation; implemented fMRIPrep-options, XCP-options, ABCD-options, CCS-options, longitudinal, surface, non-human primate and rodent pipelines in C-PAC.
- Developed a U-Net model for brain extraction and tissue segmentation on non-human primate MRI.
- Applied shared response model on Human Connectome Project connectivity data to improve brain-behavior variance explained.
- Analyzed the relationship between temporal dynamics and inter-subject correlation using naturalistic fMRI data.

Graduate Research Assistant

Feb 2018 - May 2019

New York State Psychiatric Institute, New York, NY, US

Advisor: Xiaofu He

Aug 2018 - May 2019

- Designed a real-time electroencephalogram (EEG) data classification feedback interface.
- Designed an imagery motor movement task interface for EEG data recordings using PsychoPy.
- Developed a cascade deep learning model to classify imaginary motor movement EEG signals.

Hood Visual Science Lab, Columbia University, New York, NY, US

Advisor: Donald C. Hood

Jun 2018 - May 2019

- Designed convolutional neural networks (CNN) to identify glaucoma with wide-field optical coherence tomography (OCT) scans; applied grad-cam and attention map to explain CNN features; implemented multiple strategies to enhance the generalizability of deep learning models.
- Built MATLAB-based APIs for qualitative and quantitative measures of glaucoma progression in both early and advanced glaucoma datasets using wide-field OCT scans.

Laboratory for Intelligent Imaging and Neural Computing, Columbia University, New York, NY, US

Advisor: Paul Sajda

Feb 2018 - May 2019

- Collected eye tracking data in three conditions when subjects watch lecture videos with soundtrack, slides and the speaker, to assess deciding factors in online courses.
- Analyzed eye tracking data of video study using the structural equation model to illuminate the relationship between the amount of information loading and the mechanism of cognitive regulation.

Undergraduate Research Assistant

Sep 2014 - Jun 2017

Pharmacy Informatics Lab, Xiamen University, Xiamen, FJ, CN

Advisors: Xiaokun Zhang, Zhiping Zeng

Sep 2016 - Jun 2017

- Analyzed effective compounds from a food database for modulator of an orphan nuclear receptor Nur77 that could induce apoptosis to identify ligands of Nur77.

Pharmacology and Drug Targets Lab, Xiamen University, Xiamen, FJ, CN

Advisor: Liangcheng Li

Sep 2014 - May 2017

- Detected insulin secretion in IG20-lacked beta-cells using PCR and gene targeting methods to find the most effective functional area of the gene KIAA0358.

TEACHING EXPERIENCE

University of Pennsylvania, Coursera

Teaching Assistant, CIT 595 Computer Systems Programming

Fall 2020, Spring 2021

AWARDS, SCHOLARSHIPS AND MEMBERSHIPS

Georgia Institute of Technology, Atlanta, GA, US

Electrical and Computer Engineering Fellowship

2021

Child Mind Institute, New York, NY, US

Above and Beyond Award

2021

Columbia University, New York, NY, US

First Prize, Columbia Business School & Engineering Graduate Student Council Hackathon

2019

Xiamen University, Xiamen, FJ, CN

Outstanding Graduate

2017

Study Abroad Scholarship

2016

Outstanding Student Cadre

2014, 2015, 2016

First Level Excellent Student Scholarship

2014, 2015, 2016

Member, Siyuan Excellent Student Training Program

2014 - 2017

Vice President, Sunshine Psychology Volunteer Team

2013 - 2015

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, C, R, Java, JavaScript, Shell, HTML, CSS

Neuroimaging Tools: AFNI, ANTs, FSL, FreeSurfer, SPM, Nipype, Nilearn

Deep Learning Libraries: TensorFlow, Keras, PyTorch, Weka

Cloud Computing and Virtualization Platforms: Amazon Web Services, Google Cloud, Docker, Singularity

PUBLICATIONS

Wang, X., **Li, X.**, Cho, J. W., Russ, B., Rajamani, N., Omelchenko, A., Ai, L., Korchmaros, A., Garcia, P., Wang, Z., Kalin, N. H., Schroeder, C. E., Craddock, C., Fox, A. S., Evans, A., Messinger, A., Milham, M. P., & Xu, T. (2021). **U-net model for brain extraction: Trained on humans for transfer to non-human primates.** *NeuroImage*. [[paper](#)]

Thakoor, K. A., **Li, X.**, Tsamis, E., Zemborain, Z. Z., Moraes, C. G. D., Sajda, P., & Hood, D. C. (2020). **Strategies to Improve Convolutional Neural Network Generalizability and Reference Standards for Glaucoma Detection from OCT Scans.** *Translational Vision Science and Technology*. [[paper](#)]

Thakoor, K. A., **Li, X.**, Tsamis, E., Sajda, P., & Hood, D. C. (2019). **Enhancing the Accuracy of Glaucoma Detection from OCT Probability Maps using Convolutional Neural Networks.** 2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2036–2040. [[paper](#)]

POSTERS AND PRESENTATIONS

Li, X., Ai, L., Giavasis, S., Jin, H., Franco, A. R., Feczko, E., Vogelstein, J. T., Craddock, R. C., Xu, T., Esteban, O., Poldrack, R. A., Fair, D., Satterthwaite, T., Milham, M. P. (2021). **Putting Pipeline Implementation-related Variation into Perspective for Functional Connectomics.** Organization for Human Brain Mapping 2021 Annual Meeting. [[poster](#)]

Li, X., Giavasis, S., Jin, H., Ai, L., Sólón, A., Adebimpe, A., Franco, A. R., Poldrack, R. A., Vogelstein, J. T., Xu, T., Satterthwaite, T., Craddock, R. C., & Milham, M. P. (2020). **Evaluating and Improving Cross-Pipeline Reproducibility in Functional Connectomics: A Case Study.** Organization for Human Brain Mapping 2020 Annual Meeting. [[poster](#)]

Li, X., Wang, X., Mantell, K., Casillo, E. C., Milham, M. P., Opitz, A., & Xu, T. (2021). Toward Automatic Segmentation for Non-human Primates. 2nd International Workshop on Non-invasive Brain Stimulation (NIBS). [[poster](#)]

Li, X., Tsamis, E., Thakoor, K. A., Zemborain, Z. Z., Moraes, C. G. D., & Hood, D. C. (2020). **Evaluating the transferability of deep learning models that distinguish glaucomatous from non-glaucomatous OCT circumpapillary disc scans.** Investigative Ophthalmology & Visual Science, 61(7), 4548–4548. [[abstract](#)]

Li, X., & Jin, H. **fMRI Preprocessing with Containers: How to run C-PAC with Docker and Singularity.** Brainhack Global, New York, November 2019. [[oral presentation](#)]

Li, X., Cho, J. W., Milham, M. P., & Xu, T. (2020). **Improving brain-behavior prediction using individual-specific components from connectivity-based shared response model.** Resting-State Brain Connectivity Conference 2021. [[abstract](#)]

Wang, X., **Li, X.,** Cho, J. W., Russ, B., Rajamani, N., Omelchenko, A., Ai, L., Korchmaros, A., Garcia, P., Wang, Z., Kalin, N. H., Schroeder, C. E., Craddock, C., Fox, A. S., Evans, A., Messinger, A., Milham, M. P., & Xu, T. (2021). **Transfer-learning U-Net Brain Extraction Tool (DeepBet) on Non-human Primates.** Organization for Human Brain Mapping 2021 Annual Meeting. [[poster](#)]

Giavasis, S., Clucas, J., **Li, X.,** Jin, H., Ai, L., Sólón, A., Craddock, R. C., & Milham, M. P. (2021). **The Configurable Pipeline for the Analysis of Connectomes (C-PAC) 2020-2021: Transitioning Out of Beta.** Organization for Human Brain Mapping 2021 Annual Meeting. [[poster](#)]

Shirinpour, S., Mantell, K., **Li, X.,** Puonti, O., Madsen, K., Haigh, Z., Casillo, E. C., Alekseichuk, I., Hendrickson, T., Xu, T., Thielscher, A., & Opitz, A. (2021). Extending SimNIBS to integrate non-invasive brain stimulation with functional imaging data and primate head segmentation. The BRAIN Initiative Investigators Meeting. [[poster](#)]

Jin, H., Giavasis, S., **Li, X.,** Sólón, A., Ai, L., Franco, A. R., Ramirez, J. S. B., Wang, X., Gozzi, A., Pagani, M., Fox, A., Messinger, A., Fair, D. A., Keilholz, S., Russ, B., Xu, T., Craddock, R. C., & Milham, M. P. (2020). **A Unified, End-to-End Pipeline Solution for Human and Nonhuman Functional Connectomics.** Organization for Human Brain Mapping 2020 Annual Meeting. [[poster](#)]

Feng, Y., Chung, E., **Li, X.,** Cycowicz, Y. M., & He, X. (2019). **Deep Learning for Motor Imagery Classification based on EEG Data.** New York Scientific Data Summit 2019. [[poster](#)]

Thakoor, K. A., Zheng, Q., Nan, L., **Li, X.,** Tsamis, E., Rajshekhar, R., Dwivedi, I., Drori, I., Sajda, P., & Hood, D. C. (2019). **Assessing the Ability of Convolutional Neural Networks to Detect Glaucoma from OCT Probability Maps.** Investigative Ophthalmology & Visual Science, 60(9), 1464–1464. [[abstract](#)] [[poster](#)]

Joiner, D., **Li, X.,** Eguia, M., Tsamis, E., Sun, A., Moraes, C. G. D., Ritch, R., & Hood, D. C. (2019). **Detecting progression of preserved areas of retinal nerve fiber layer in advanced glaucoma using optical coherence tomography.** Investigative Ophthalmology & Visual Science, 60(9), 5547–5547. [[abstract](#)] [[poster](#)]

Eguia, M., **Li, X.,** Joiner, D., Tsamis, E., Moraes, C. G. D., Ritch, R., & Hood, D. C. (2019). **Detecting progression on local areas of retinal nerve fiber layer in glaucoma suspects and early glaucoma using optical coherence tomography.** Investigative Ophthalmology & Visual Science, 60(9), 5594–5594. [[abstract](#)] [[poster](#)]

Sun, A., Tsamis, E., **Li, X.**, Tsang, K., Al-Aswad, L., Blumberg, D., Cioffi, G., Liebmann, J. M., Moraes, C. G. de, & Hood, D. C. (2019). **Detecting progression of early glaucoma using alternative methods with optical coherence tomography.** Investigative Ophthalmology & Visual Science, 60(9), 5545–5545.
[\[abstract\]](#) [\[poster\]](#)