

# XINHUI LI

xli993@gatech.edu | +1 (646) 280-6835 | [Personal Website](#) | [Google Scholar](#) | [GitHub](#)

## EDUCATION

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

## RESEARCH INTERESTS

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Neuroimaging, Machine Learning, Brain Computer Interaction

## PROFESSIONAL EXPERIENCE

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**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

- Developed the software Configurable Pipeline for the Analysis of Connectomes (C-PAC) for MRI processing and analysis; maintained 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

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*University of Pennsylvania, Coursera*

**Teaching Assistant**, CIT 595 Computer Systems Programming

Fall 2020, Spring 2021

## AWARDS, SCHOLARSHIPS AND MEMBERSHIPS

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*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

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**Programming Languages:** Python, MATLAB, C/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

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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

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**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.  
[\[abstract\]](#) [\[poster\]](#)