

# Xinhui Li

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## EDUCATION

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### Georgia Institute of Technology

*Ph.D., Electrical and Computer Engineering*

Atlanta, GA, US

Aug 2021 - Exp. May 2025

### University of Pennsylvania

*M.S., Computer and Information Technology*

Coursera

May 2019 - Aug 2021

### Columbia University

*M.S., Biomedical Engineering*

New York, NY, US

Aug 2017 - Feb 2019

### Xiamen University

*B.S., Pharmaceutical Science*

Xiamen, FJ, CN

Aug 2013 - Jul 2017

### Utrecht University

*Exchange Student, Economics and Humanities*

Utrecht, UT, NL

Feb 2016 - Jun 2016

## PROFESSIONAL EXPERIENCE

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### Graduate Research Assistant

*TRENDs Center, Georgia Institute of Technology*

Aug 2021 - Present

Atlanta, GA, US

- Developing a functional network connectivity interpolation method to estimate continuous alternations between controls and patients with mental disorders (schizophrenia, autism, depression) using a variational autoencoder.
- Developing a non-linear multimodal independent subspace analysis framework for neuroimaging data.

### Graduate Teaching Assistant

*University of Pennsylvania*

Aug 2020 - May 2021

Coursera

- Developed an autograder for class projects, held office hours and recitations, answered questions in discussion forum, graded exams for the class CIT 595 Computer Systems Programming.

### Assistant Research Engineer

*Computational Neuroimaging Lab, Child Mind Institute*

Jun 2019 - Aug 2021

New York, NY, US

- Developed the software Configurable Pipeline for the Analysis of Connectomes (C-PAC) for magnetic resonance imaging (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 data.
- Improved brain-behavior variance explained using shared response model on Human Connectome Project data.
- Analyzed spatial temporal dynamics and inter-subject correlation on naturalistic neuroimaging data.

### Graduate Research Assistant

*New York State Psychiatric Institute*

Aug 2018 - May 2019

New York, NY, US

- Designed a motor imagery task interface for electroencephalogram (EEG) data recordings using PsychoPy.
- Developed a cascade ResNet-LSTM deep learning model to classify motor imagery EEG signals.

### Graduate Research Assistant

*Hood Visual Science Lab, Columbia University*

Jun 2018 - May 2019

New York, NY, US

- 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, such as data augmentation and multimodal input, 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.

### Graduate Research Assistant

*Laboratory for Intelligent Imaging and Neural Computing, Columbia University*

Feb 2018 - May 2019

New York, NY, US

- Collected eye tracking data in three conditions when subjects watch lecture videos with soundtrack, slides and the speaker, to assess determinant 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 and Pharmacology and Drug Targets Lab, Xiamen University*

*Xiamen, FJ, CN*

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

## LEADERSHIP & MEMBERSHIPS

### Scholar

2021 - 2025

*Georgia Tech/Emory Computational Neural-Engineering Training Program*

*Atlanta, GA, US*

### Website and Communications Manager Elect

2021 - 2022

*Organization for Human Brain Mapping Brain Art Special Interest Group*

*Glasgow, SC, UK*

### Student Member

2021 - 2023

*Organization for Human Brain Mapping*

### Student Member

2021 - 2022

*Institute of Electrical and Electronics Engineers*

### Scholar

2014 - 2017

*Xiamen University Siyuan Excellent Student Training Program*

*Xiamen, FJ, CN*

### Vice President

2014 - 2015

*Xiamen University Sunshine Psychology Volunteer Team*

*Xiamen, FJ, CN*

## AWARDS

**Electrical and Computer Engineering Fellowship** | *Georgia Institute of Technology*

2021

**Above and Beyond Award** | *Child Mind Institute*

2021

**Columbia Hackathon First Prize** | *Columbia University*

2019

**Outstanding Graduate** | *Xiamen University*

2017

**Study Abroad Scholarship** | *Xiamen University*

2016

**Outstanding Student Cadre** | *Xiamen University*

2014, 2015, 2016

**First Level Excellent Student Scholarship** | *Xiamen University*

2014, 2015, 2016

## TECHNICAL SKILLS

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

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

**Deep Learning Libraries:** PyTorch, TensorFlow, Keras, Weka

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

## PUBLICATIONS

**Xinhui Li**, Lei Ai, Steve Giavasis, Hecheng Jin, Eric Feczko, Ting Xu, Jon Clucas, Alexandre Franco, Anibal Sólón Heinsfeld, Azeez Adebimpe, Joshua Vogelstein, Chao-Gan Yan, Oscar Esteban, Russell Poldrack, Cameron Craddock, Damien Fair, Theodore Satterthwaite, Gregory Kiar, and Michael Milham. **Moving Beyond Processing and Analysis-Related Variation in Neuroscience.** *bioRxiv*, 2021

Rogers Silva, Eswar Damaraju, **Xinhui Li**, Peter Kochonov, Aysenil Belger, Judith M. Ford, Sarah McEwen, Daniel H. Mathalon, Bryon A. Mueller, Steven G. Potkin, Adrian Preda, Jessica A. Turner, Theo G.M. van Erp, Tulay Adali, and Vince D. Calhoun. **Multimodal IVA fusion for detection of linked neuroimaging biomarkers.** *bioRxiv*, 2021

Michael Milham ... **Xinhui Li** ... **Toward next-generation primate neuroscience: A collaboration-based strategic plan for integrative neuroimaging.** *Neuron*, 2021

Xindi Wang, **Xinhui Li**, Jae Wook Cho, Brian E. Russ, Nanditha Rajamani, Alisa Omelchenko, Lei Ai, Annachiara Korchmaros, Stephen Sawiak, R. Austin Benn, Pamela Garcia-Saldivar, Zheng Wang, Ned H. Kalin, Charles E. Schroeder, R. Cameron Craddock, Andrew S. Fox, Alan C. Evans, Adam Messinger, Michael P. Milham, and Ting Xu. **U-net model for brain extraction: Trained on humans for transfer to non-human primates.** *NeuroImage*, 235:118001, 2021

Kaveri A. Thakoor, **Xinhui Li**, Emmanouil Tsamis, Zane Z. Zemborain, Carlos Gustavo De Moraes, Paul Sajda, and Donald C. Hood. **Strategies to Improve Convolutional Neural Network Generalizability and Reference Standards for Glaucoma Detection From OCT Scans.** *Translational Vision Science & Technology*, 10:16, 2021

Kaveri A. Thakoor, **Xinhui Li**, Emmanouil Tsamis, Paul Sajda, and Donald C. Hood. **Enhancing the Accuracy of Glaucoma Detection from OCT Probability Maps using Convolutional Neural Networks.** In *2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, pages 2036–2040, 2019

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## PRESENTATIONS

**Xinhui Li.** Moving Beyond Processing and Analysis-Related Variation in Neuroscience. OpenTalks, March 2022

**Xinhui Li** and Hecheng Jin. **C-PAC: A flexible and ease-of-use MRI preprocessing and analysis toolbox.** OpenTutorials, October 2021

**Xinhui Li**, Lei Ai, Steve Giavasis, Hecheng Jin, Jon Clucas, Alexandre Franco, Eric Feczko, Joshua Vogelstein, Cameron Craddock, Ting Xu, Oscar Esteban, Russell Poldrack, Damien Fair, Theodore Satterthwaite, and Michael Milham. **Putting Pipeline Implementation-related Variation into Perspective for Functional Connectomics.** Organization for Human Brain Mapping, 2021

**Xinhui Li**, Xindi Wang, Kathleen Mantell, Estefania Casillo Cruz, Michael Milham, Alex Opitz, and Ting Xu. **Toward Automatic Segmentation for Non-human Primates.** 2nd International Workshop on Non-invasive Brain Stimulation, 2021

**Xinhui Li**, Steve Giavasis, Hecheng Jin, Lei Ai, Anibal Sólón Heinsfeld, Azeez Adebimpe, Alexandre Franco, Russell Poldrack, Joshua Vogelstein, Ting Xu, Theodore Satterthwaite, Oscar Esteban, Cameron Craddock, and Michael Milham. **Evaluating and Improving Cross-Pipeline Reproducibility in Functional Connectomics: A Case Study.** Organization for Human Brain Mapping, 2020

**Xinhui Li**, Emmanouil Tsamis, Kaveri A. Thakoor, Zane Z. Zemborain, Carlos Gustavo De Moraes, and Donald C. Hood. **Evaluating the transferability of deep learning models that distinguish glaucomatous from non-glaucomatous OCT circumpapillary disc scans.** Investigative Ophthalmology & Visual Science, 2020

**Xinhui Li** and Hecheng Jin. **fMRI Preprocessing with Containers: How to run C-PAC with Docker and Singularity.** Brainhack Global, New York, November 2019