# XINHUI LI

512 West 112th Street, Apt 1B, New York, NY10025 | +1(646)280-6835 | xinhui.li@childmind.org

## EDUCATION

**University of Pennsylvania**, Coursera (GPA: 4.0/4.0) M.S., Computer and Information Technology, 2021

**Columbia University**, New York, US (GPA: 4.0/4.3) M.S., Biomedical Engineering, 2019

**Xiamen University**, Xiamen, CN (GPA: 3.6/4.0) B.S., Pharmaceutical Science, 2017

**Utrecht University**, Utrecht, NL Exchange Student, Economics and Humanities, 2016

## RESEARCH INTERESTS

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

## PROFESSIONAL EXPERIENCE

**Assistant Research Engineer** Jun 2019 - Present

*Computational Neuroimaging Lab, Child Mind Institute, New York, 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, longitudinal, surface and non-human pipelines in C-PAC.
- Developed U-Net model for brain extraction and tissue segmentation on non-human primate MRI.
- Applied connectivity-based shared response model on Human Connectome Project connectivity data to improve brain-behavior variance explained.

**Graduate Research Assistant** Feb 2018 - May 2019

*New York State Psychiatric Institute, New York, US*

Advisor: Xiaofu He Aug 2018 - May 2019

- Designed a real-time electroencephalogram (EEG) data classification feedback car-racing interface.
- Designed a motor movement and imagery 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, 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; explored 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, 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, 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, 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

Software System Programing, University of Pennsylvania, Coursera — Teaching Assistant, Fall 2020

## SCHOLARSHIPS AND MEMBERSHIPS

First Prize, CBS & EGSC HACKATHON 2019, Columbia University, US — 2019
Outstanding Graduate, Xiamen University, CN — 2017
First Level Excellent Student Scholarship, Xiamen University, CN — 2014, 2015, 2016
Outstanding Student Cadre, Xiamen University, CN — 2014, 2015, 2016
Vice President, Sunshine Psychology Volunteer Team, Xiamen University, CN — 2013 – 2015

## TECHNICAL SKILLS

Programming Languages: Python, MATLAB, C, R, Shell, Java, JavaScript, HTML, CSS
Deep Learning Libraries: TensorFlow, Keras, PyTorch
Cloud Computing and Virtualization Platforms: Amazon Web Services, Google Cloud, Docker, Singularity
Neuroimaging Tools: AFNI, ANTs, FSL, FreeSurfer, SPM, Nipype, Nilearn

## 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. (2020). **U-Net Model for Brain Extraction on Non-human Primates**. NeuroImage. (under review) [preprint]

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. (under review)

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]

Milham, M. P., **Li, X.,** Jin, H., Giavasis, S., Ai, L., et al. **Moving Functional MRI Beyond Pipeline-Related Variation in Preprocessing**. (in prep)

**Li, X.,** Feng, Y., & He, X. **Deep Learning for Motor Imagery Classification with EEG Data**. (in prep)

## POSTERS AND PRESENTATIONS

**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]

**Li, X.,** Giavasis, S., Jin, H., Ai, L., Sólon, 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]

Jin, H., Giavasis, S., **Li, X.,** Sólon, 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]

**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. [presentation slides]

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]