HECHENG JIN

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Highly motivated self-starter, with extensive neuroimaging programming experience focused on pipeline development. Passionate about brain-behavior relationship research, especially using the neuroimaging data to understand the mental disorders and study individual brains differences.

EDUCATION

Columbia University *New York, NY* Aug 2017 - Feb 2019

M.S. in Biomedical Engineering (GPA: 4.0/4.0)

Relevant Courses: Functional Imaging Brain (fMRI), Brain Computer Interfaces (EEG-based), Signal Processing and Signal Modeling, Computational Modeling of Physiological Systems

Tsinghua University *Beijing, China*

B.E. in Engineering Physics (Major, GPA: 3.5/4.0) Aug 2013 - Jul 2017

e-Finance and Entrepreneurship, PBC School of Finance (Minor, GPA: 3.8/4.0)

Award: Best Prototype at Columbia University Graduate Engineering Design Expo

Scholarship: Overseas Koreans Foundation Scholarship

RESEARCH and PROFESSIONAL EXPERIENCE

Assistant Research Engineer May 2019 - Present

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

Project 1. A Unified, End-to-End Pipeline Solution for Human and Nonhuman Functional Connectomics

Advisor: Michael P. Milham, Child Mind Institute, New York, NY Jun 2019 - Present

- Extended the Configurable Pipeline for the Analysis of Connectomes (C-PAC) open-source software to automate the preprocessing and analysis of human and nonhuman fMRI data.
- Implemented neuroimaging analysis packages (ANTs, AFNI, FSL and FreeSurfer), deep learning models, and statistical methods to facilitate both human and nonhuman data processing.
- Presented the results obtained using the nonhuman pipeline configurations in C-PAC as a poster at the *2020 Organization for Human Brain Mapping (OHBM) Annual Meeting*, and released all the nonhuman pipeline configurations and the functionality in the C-PAC Version 1.6.2.

Project 2. Assessing Functional Connectivity Beyond Pearson's Correlation

Advisor: Ting Xu, Child Mind Institute, New York, NY Oct 2019 - Present

- Used a statistical model - Multiscale Graph Correlation (MGC) to examine the linear and nonlinear relation of fMRI signals in both human and macaque samples including awake and various anesthetized states.
- Characterized the linear and nonlinear nature of homotopic functional connectivity to facilitate the understanding of brain organization across different states and species.
- Submitted the result as an abstract at the *2020 Resting State Brain Connectivity* and drafted a manuscript to publish soon.

Graduate Research Assistant Sep 2017 - Present

Columbia University, New York, NY | The George Washington University, Washington, DC

Project 1. The Impact of Reflection on Adult Brain and its Implication for Practice

Advisor: Yoshie T. Nakamura, The George Washington University, Washington, DC Sep 2018 - Present

- Designed an EEG study based on ethical dilemma scenario stimuli to explore the impacts of individual versus guided reflection.
- Searched for appropriate signal pre-processing techniques to remove eye blink and noise related artifacts from low resolution EEG, and correlated alpha, beta, theta, and gamma waves and behavior data to better understand how reflection impacts brain activities.
- Presented the initial result at the 2019 *International Conference on Business and Social Science,* and will present the recent result on an expanded sample at the *2021 International Brain-Computer Interface Meeting.*

Project 2. BioDesign Global Health Project

Advisor: Katherine E. Reuther, Columbia University, *New York, NY* Sep 2017 - Sep 2018

- Collaborated with three colleagues and a Med-Tech startup to validate the clinical need in screening neonatal jaundice.
- Developed and prototyped a hand-held and noninvasive device to diagnose neonatal jaundice in developing countries.
- Awarded a cFund Ignition Grant of $10,000 in the Columbia Engineering Entrepreneurship.

Data Analyst Intern May 2018 - Sep 2018

Columbia Business School, *New York, NY*

- Collected and analyzed 12 professionals' EEG data in an executive education program, created individualized reports for each.
- Managed data with a context in cognitive neuroimaging, electrical activities of the brain, and statistics.
- Constructed a neuroscience-based recommendation tool to recommend appropriate education programs to potential clients.

CONFERENCE

H. Jin & X. Li. (2019) **fMRI Preprocessing with Containers: How to run C-PAC in Docker or Singularity.** *Brainhack Global,* New York, New York. November. [**Oral Presentation**]

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

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

H. Jin, J.S. Ramirez, J.T. Vogelstein, M.P. Milham, T. Xu. (2020) **Assessing Functional Connectivity Beyond Pearson's Correlation.** *Resting State Brain Connectivity 2021,* Dallas, TX. September. [abstract][Postponed to 2021 due to COVID-19]

Y.T. Nakamura, Y. Gu, **H. Jin**, S. Kalla. (2020) **Brain-Computer Interface for the Classification of Brain Activation in Face of Ethical Decision Making.** *International Brain-Computer Interface Meeting,* Brussel, Belgium. June. [abstract][Postponed to 2021 due to COVID-19]

Y.T. Nakamura, **H. Jin**, Y. Gu, R. Rehman. (2020) **Ethical Leadership Development: The Role of Reflection in Adult Brain.** *Academy of Human Resource Development Conference,* Atlanta, Georgia. February. [Conference paper]

Y.T. Nakamura, Y. Gu, **H. Jin**, R. Rehman. (2019) **Adult Learning in Time of Crisis: The Impact of Reflection on Adult Brain and its Implication for Practice.** *International Conference on Business and Social Science*, Kyoto, Japan. March. [Oral Presentation]

PUBLICATIONS

M.P. Milham, **H. Jin**, X. Li, S. Giavasis, T. Satterthwaite, et al. **Moving Functional MRI Beyond Pipeline-Related Variation in Preprocessing.** [in prep]

M.P. Milham, H. Jin, S. Giavasis, A. Solon, L. Ai, A.R. Franco, J.S. Ramirez, A. Gozzi, M. Pagani, B. Russ, T. Xu, et al. **A Unified, End-to-End Pipeline Solution for Nonhuman Functional Connectomics.** [in prep]

Y.T. Nakamura, **H. Jin**, Y. Gu, R. Rehman, et al. **Scenario Development for Reflection: An Experimental Design for Educational Neuroscience.** [in prep]

SKILLS and INTERESTS

Computer Skills:	Python, MATLAB, Shell, Docker, Singularity, AWS
Neuroimaging Tools:	ANTs, AFNI, FSL, FreeSurfer, Nipype, Nilearn
Native Languages:	Korean, Chinese
Interests and Volunteer Work:	Girls Who Code, Columbia Engineering Outreach Team, Columbia Volleyball IM Team, LEGO