HSIANG-YUN SHERRY CHIEN

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PROFESSIONAL SUMMARY

- Ph.D. researcher in Computational Neuroscience / Cognitive Psychology
- Expertise in machine learning / natural language processing (NLP) / data analytics and visualization
- 8+ years of experience conducting independent research / 5+ years of experience designing and analyzing neural network sequence models to improve model performance on processing sequential data

EDUCATION

Ph.D. in Psychological and Brain Sciences	Johns Hopkins University	*Baltimore, MD*	08. 2018 - 05. 2021
M.A. in Psychological and Brain Sciences	Johns Hopkins University	*Baltimore, MD*	06. 2016 - 08. 2018
B.S. in Electrical Engineering	National Taiwan University	*Taipei, Taiwan*	09. 2009 - 06. 2013

SKILLS & ABILITIES

Technical skills

- **Programming**: Python | Pytorch | Numpy | Scipy | Scikit-learn | Matlab | Javascript
- **Machine learning**: Recurrent neural networks (RNNs) | Natural language processing & modeling | Neural network model design, evaluation and optimization | Semantic representation learning
- **Data science**: Statistical inference | Data visualization | Large-scale real-world data processing and analysis

Languages

- Bilingual: Chinese and English

PROFESSIONAL EXPERIENCE

Full-time AI Research Intern, Intel AI research *Hillsboro, OR* 10. 2020 - present

- Lead a research project improving the ability of long-timescale information learning in recurrent neural networks (RNNs) and alleviating the vanishing gradient problem. The proposed model outperforms other existing models and is in preparation for submitting to ICML (2021).
- Author a scientific review on current RNN models for advancing the field of developing RNNs for sequential data and language modeling.
- Collaborate with members in the team (Brain-Inspired Computing Lab) on projects designing brain-inspired ML algorithms.

Graduate Research Assistant, Johns Hopkins University *Baltimore, MD* 06. 2016 - present

- Lead a research project investigating how the temporal context of language is represented and computed in the human brain during narrative listening, by combining methods of computational modeling and neuroimaging data analysis on large-scale real-world data.
- Design a brain-inspired hierarchical RNN model for sequence learning and processing, which successfully reproduces the multi-timescale neural representation patterns during language processing. We show that multi-timescale representation learning is important for both the human brain and RNN models, which inspires the design of RNNs in the field.
- Mentor and collaborate with a CS-major undergraduate (Jinhan Zhang) on a project proposing a method for investigating how multi-timescale information is encoded in RNNs. The method was designed to be implemented on any neural network sequence models and successfully mapped the timescale organization of LSTM neural language models. This work has been accepted to be published and presented in ICLR (2021).

Clinical Research Assistant, National Taiwan University Hospital *Taipei, Taiwan* 06. 2016 - 05. 2021

- Conduct independent research investigating the relationship between abnormal large-scale brain network and abnormal social and memory functions in patients with autism.
- Collaborate with psychiatrists on collecting functional and structural neuroimaging data of patients with neuropsychiatric disorders.

SCIENTIFIC PUBLICATIONS & PRESENTATIONS

Journal publications

- **Chien HYS**, Zhang J and Honey C J (2021) Mapping the Timescale Organization of Neural Language Models, *International Conference on Learning Representations (ICLR) accepted as poster presentation*, *https://arxiv.org/abs/2012.06717*
- **Chien HYS** and Honey C J (2020) Constructing and Forgetting Temporal Context in the Human Cerebral Cortex, *Neuron 106(4): 675-86*
- Himberger KD, **Chien HY**, and Honey CJ (2018). Principles of Temporal Processing Across the Cortical Hierarchy, *Neuroscience 389: 161-174*
- **Chien HY**, Lin HY, Lai MC, Gau SSF, and Tseng WYI (2015) Hyperconnectivity of the right posterior temporo-parietal junction predicts social difficulties in boys with autism spectrum disorder, *Autism Research 8(4):427-41*
- **Chien HY**, Gau SSF, Hsu YC, Chen YJ, Lo YC, Shih YC, and Tseng WYI (2015) Altered cortical thickness and tract integrity of the mirror neuron system and associated social communication in autism spectrum disorder, *Autism Research 8(6):694-70*
- **Chien HY**, Gau SSF, Tseng WYI (2016) Deficient visuospatial working memory functions and neural correlates of the default-mode network in adolescents with autism spectrum disorder, *Autism Research 9(10):1058-1072*

Conference presentations

- **Chien HYS** and Honey C J (2018) Modeling the effects of temporal context on neural responses across the cortical hierarchy, *Conference on Cognitive Computational Neuroscience (CCN), Philadelphia, PA, poster presentation*
- **Chien HYS** and Honey C J (2017) HTRACX: a hierarchical model for perceiving and learning sequences, *Society for Neuroscience Annual Conference (SfN)*, *Washington, D.C.*, oral presentation
- **Chien HYS** and Honey C J (2017) A hierarchical model for sequential perception and sequence learning, *Conference on Cognitive Computational Neuroscience (CCN), New York, NY, poster presentation*
- **Chien HY**, Gau SSF et al. (2015) Distinctive development of functional and structural connectivity within default mode network in autism spectrum disorder, *IMFAR, Salt Lake City, UT oral presentation*
- **Chien HY**, Li CW et al. (2014) Witness of other's action receiving reward activates a cerebro-cerebellar system — an fMRI study of observational learning in humans, *OHBM, Hamburg, Germany poster presentation*

AWARDS

- 2017-2018 Taiwan Government Scholarship to study Abroad ($16000/year) — 2017 - 2018
- 2018 Conference on Cognitive Computational Neuroscience Student Travel Award (awarded to top 20 conference papers) — 2018
- 2020 G. Stanley Hall Scholar's Award from Johns Hopkins University for graduate student who demonstrates exceptional scholarly progress in dissertation research — 2020

TEACHING AND LECTURING

Spring 2019	AS.200.329.01	Real World Human Data: Analysis & Visualization	Johns Hopkins University
Fall 2017	AS 200.313.01	Models of Mind and Brain	Johns Hopkins University

ACTIVITIES & SERVICES

- Member of National Taiwan University Cancer Children Service Club, conducting service (weekly visiting, hosting outdoor activities, etc.) for children with cancer — 2010 - 2013
- Member of Taiwan World Youth Volunteer Association, joining international service in Chiang Rai, Thailand, for Chinese teaching in elementary schools and cultural communication activities — 2013