

Anmin Yang

E-mail: anmin@uchicago.edu | GitHub: github.com/Anmin-Yang |

Personal Website: anmin-yang.github.io

EDUCATION

University of Chicago, Chicago, Illinois

Master of Arts, Computational Social Sciences, May 2023 (expected)

Beijing Normal University, Beijing, China

Master of Pedagogy in Cognitive Neuroscience, May 2021

Thesis: "The Perception of Illusory Contours in Deep Neural Networks"

Advisor: Dr. Jia Liu, Professor of Psychology

Wuhan University, Wuhan, China

Bachelor of Management in Marketing, May 2018

Thesis: "The Influence of Displayed Quantity of Products on Consumer Purchase Intentions"

Advisor: Dr. Jing Huang, Professor of Marketing

RESEARCH EXPERIENCE

University of Chicago, Chicago, Illinois

*Graduate Researcher
September 2022 – June 2023*

Shared and Distinct Neural Signatures of Feature and Spatial Attention

- Conducted analysis of behavioral data
- Utilized machine-learning techniques (SVC, PCA-Lasso) to perform pattern analysis on an in-house fMRI dataset consisting of 235 individuals engaged in feature and spatial attention tasks
- Investigated neural signatures at the cortical network scale
- Applied single-cluster and 'virtual lesion' analysis methods to identify the shared and distinct components
- Compared neural signature patterns at the voxel scale
- Original draft of the paper

Beijing Normal University, Beijing, China

*Research Assistant, Professor Ke Zhou
September 2021 – June 2022*

Distinct Mechanisms of Social Attention and Non-Social Attention

- Developed and designed an experiment using the pre-cueing paradigm with varying cue validity
- Implemented the experiment code
- Conducted a human behavioral experiment and analyzed the obtained behavioral results
- Paper published on *Progress in Biochemistry and Biophysics*

Human-like Facial Expression Representation in Deep Convolutional Neural Networks

- Conducted control analysis on units of interest to assess their selectivity for facial expressions, including stimuli such as inverted faces, scrambled faces, and negative faces
- Gathered human behavioral data to evaluate the facial expression representation of human using a naturalistic image dataset
- Compared the performance of humans and models using confusion matrices
- Quantified the categorical perception of facial expressions within the expression-selective units
- Investigated and compared expression-selective units in networks with different levels of experience, including those with random weights, involved in an object recognition task, and engaged in a face identification task
- Paper published on *Science Advances*

Beijing Normal University, Beijing, China

*Master Student, Professor Jia Liu
September 2021 – June 2022*

Natural language processing of narrative writing for depression screening in adolescents

- Gathered written compositions and associated data from students across various grade levels, ranging from primary to high school
- Employed a psycholinguistic approach using the Linguistic Inquiry and Word Count (LIWC) tool, with traditional Natural Language Processing (NLP) techniques such as TF-IDF (Term Frequency-Inverse Document Frequency), machine learning algorithms including Logistic Regression, Multi-Layer Perceptron (MLP), Random Forest (and with gradient boosting), and Support Vector Machines (SVM), as well as word-embedding (word2vec) with deep neural networks such as TextCNN, and TextRNN
- Applied these methodologies to predict students' mental states based on a single piece of composition they had written
- Identified key psychological categories of words in predicting depression disorder
- Original draft of the paper

Comparing human and Deep neural networks on the perception of illusory contours (master thesis)

- Conducted fine-tuning of neural networks using Kanizsa figures classification tasks
- Gathered data on human behavior related to the perceived intensity of illusory contours using 2AFC (Two-Alternative Forced Choice) tasks
- Compared the performance of both humans and neural networks in terms of weak and strong equivalence, considering evidence such as relative complexity and intermediate states

Manually denoise the open fMRI data set for studyforest

- Manually labelled seven different noises (head motion, hardware, white matter etc.) identified by ICA algorithm from open fMRI dataset for studyforest
- Calculated inter-rater classification reliability
- Paper published on *Scientific Data*

Publications

Zhou, L., **Yang, A.**, Meng, M., & Zhou, K. (2022). [Emerging human-like facial expression representation in a deep convolutional neural network](#). *Science advances*, 8(12), eabj4383.

Zhang, D., Zhou, L., **Yang, A.**, Li, S., Chang, C., Liu, J., & Zhou, K. (2023). [A connectome-based neuromarker of nonverbal number acuity and arithmetic skills](#). *Cerebral Cortex*, 33(3), 881-894.

Zhang, G., **Yang, A.**, Sun J., Zhou, L., Zhou, K. (2022). The Influence of Cue Validity on Social Attention and Exogenous Attention. *Progress in Biochemistry and Biophysics*, 49(3), 584-590 (in Chinese)

Liu, X., Zhen, Z., **Yang, A.**, Bai, H., & Liu, J. (2019). [A manually denoised audio-visual movie watching fMRI dataset for the studyforest project](#). *Scientific Data*, 6(1), 295.

Tian, L.*, **Yang, A.***, Zhang, G., Tang, X., Zhou, K., Liu, J. (submitted). [Natural language processing of narrative writing for depression screening in adolescents](#). PsyArXiv. [10.31234/osf.io/5f9nb](https://doi.org/10.31234/osf.io/5f9nb)

Yang, A., Zhou, L., Liu, J., Zhou, K. (in preparation). Shared and distinct neural signatures of feature and spatial attention.

TEACHING EXPERIENCE

Beijing Normal University, Beijing, China

Teaching Assistant, Experimental Psychology -Professor Ke Zhou,
2021 Spring, 2020 Fall, 2020 Spring, 2019 Fall

- Developed example codes for experiments and provided guidance to students in revising their own codes
- Supervised students' execution of experiments
- Assessed and graded examinations, assignments, and experimental reports

Teaching Assistant, Cognitive Psychology -Professor Ke Zhou, 2019 Spring

- Facilitated and guided classroom discussions as the discussion leader
- Assessed, evaluated, and graded examinations, assignments, and experimental reports

SELECT HONORS & AWARDS

Maroon Scholar Research Scholarship (Half Tuition Scholarship), University of Chicago, 2022- 2023

Academic Award (First Order, 10%), Beijing Normal University, 2020-2021

Academic Award (Second Order, 20%), Beijing Normal University, 2019-2020

Academic Award (Third Order, 30%), Beijing Normal University, 2018-2019