Yanting Han

https://ellenhan0201.github.io/ | https://www.linkedin.com/in/yanting-han-814929a0/
+1 (626)-714-9212 | ellenhan0201@outlook.com

Summary

PhD researcher experienced in conducting end-to-end research (quantitative and qualitative) independently with expertise in forming research questions; designing and implementing surveys and experiments; large-scale online data collection; data analysis including cleaning, visualization, predictive modeling, and hypothesis testing; and presenting and communicating discoveries verbally and in writing developed from extensive teaching experience and collaboration with colleagues.

Education

California Institute of Technology *Pasadena, CA, USA*

Ph.D, Neurobiology and Neurosciences, GPA: 4.1/4.0 *2016/9 – 2022/6 (expected)*

- *Relevant Coursework*: Machine Learning Data Mining, Statistical Inference, Applied Linear Algebra.

Tsinghua University *Beijing, China*

B.S, Engineering Physics *2012/9 – 2016/6*

- *Relevant Coursework*: Calculus, General Physics, Linear Algebra, Introduction to Complex Analysis, Probability and Statistics, Methods of Mathematics and Physics.

Relevant research experience

California Institute of Technology (BBE)

Constructing and testing a new dimensional space for human emotion experiences.

- Independently designed and implemented 12 behavioral tasks (Python and JavaScript) to measure emotions evoked by 150 stories and 1000 videos.
- Utilized online crowdsourcing platforms (Prolific) for fast and effective behavioral data collection: a million ratings on scientifically motivated affective scales from 1000+ participants collected in 1 month.
- Implemented comprehensive quality control processes to ensure the validity and reliability of data.
- Investigated the structure of high-dimensional human emotion space by creating interactive Bokeh visualizations (tSNE, UMAP) and applying linear and nonlinear dimensionality reduction techniques(PCA, Factor Analysis, clustering).
- Trained machine learning models to predict emotion categories, evaluated feature importance and assessed model generalizability across stimuli types.

COVID-DYNAMIC project.

- Conceived and launched a longitudinal panel study on Prolific (17 waves, 1000+ participants) that characterizes the dynamics of psychological, attitudinal, and behavioral changes during the COVID pandemic as a core investigator (paper under review as joint first author).
- Managed multiple aspects of the project including data collection monitoring, participant communication, payment and budget management ($200k).
- Led a team of 4 undergraduate students to compile a comprehensive summary of 500+ COVID-related psychological studies and created an interactive Bokeh visualization.
- Measured real-life emotions repeatedly in Qualtrics using established questionnaires, ratings on novel affective scales and free text responses.
- Investigated the effect of stress and isolation on emotions by performing longitudinal panel data analysis in STATA.

Investigation of psychological measures in the Human Connectome Project.

- Utilized a set of 37 behavioral measures from the Human Connectome Dataset to identify the same individual and their identical twins with accuracy significantly above chance.
- Developed a novel machine learning based approach in Python (Ridge and Random Forest model) to classify two types of twins with 80% accuracy, paper published as first author on PloS one.

Publications

Peer-reviewed

Han, Y., & Adolphs, R. (2020). Estimating the heritability of psychological measures in the Human Connectome Project dataset. *PloS One*.

Dubois, J., Galdi, P., **Han, Y.**, Paul, L. K., & Adolphs, R. (2018). Resting-state functional brain connectivity best predicts the personality dimension of openness to experience. *Personality neuroscience*.

Liu, Y., Gao, M., Mei, S., **Han, Y.**, & Liu, J. (2013). Ultra-compliant liquid metal electrodes with in-plane self-healing capability for dielectric elastomer actuators. *Applied Physics Letters*.

Preprints

Rusch, T.*, **Han, Y.***, Liang, D.*, Hopkins, A., Lawrence, C., Maoz, U., Paul, L. & Stanley, D. COVID-DYNAMIC: A large-scale multifaceted longitudinal study of socioemotional and behavioral change across the pandemic. *PsyArXiv*.
* *equal contribution, the order of the authors was determined randomly.*

In Prep

Han, Y., & Adolphs, R. Data-driven discovery of affective dimensions characterizing human emotion experiences. (*in prep*)

Han, Y., & Adolphs, R. A characterization of emotions experienced during the COVID pandemic. (*in prep*)

Han, Y., & Adolphs, R. The experiences of emotions under prolonged stress and isolation. (*in prep*)

Awards

XuanYuan Scholarship, Tsinghua University, awarded for academic excellence 2015

Teaching/Leadership

California Institute of Technology

Head Teaching Assistant (Introduction to Neuroscience.) *Spring 2018 & 2019*

- Organized and taught weekly recitations; organized and held weekly office hours; prepared and graded quizzes, problem sets and exams.
- Worked with professors and other TAs to coordinate all aspects of the course.

California Institute of Technology

Lead investigator – COVID Dynamic Longitudinal Study *Apr. 2020 – present*

- Managed data collection, participant communication and payment across 17 waves for 1000+ participants.
- Led a team of 4 undergrad students to compile a comprehensive summary of several hundred COVID-related psychological studies and created an interactive visualization to help researchers identify and locate studies of interest.

Skills

Programming: Python (scikit-learn, Pandas, NumPy, SciPy, Keras, TensorFlow), Matlab, JavaScript, R, Mysql, SPSS, STATA.

Experimental: PsychoPy, PsychoJS, Qualtrics, Prolific, Mechanical Turk.

Languages: English (fluent), Mandarin (native).