Yue Xu

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EDUCATION:

California Institute of Technology, Ph.D. candidate, Sep. 2019 – Present

- **Computation and Neural Systems** Program
- Chen Graduate **Fellow**
- **PI:** Ralph Adolphs, *Bren Professor of Psychology, Neuroscience, and Biology, Caltech*

Carnegie Mellon University, Bachelor of Science, Sep. 2015 – Jun. 2019

- Primary Major in **Computer Science,** School of Computer Science
- Additional Major in **Physics**, Mellon College of Science
- Minor in **Neural Computation**, Center for the Neural Basis of Cognition
- Undergraduate Research Program in Neuro Computation **Fellow**

RESEARCH PROJECTS:

Personality judgements of faces (preprint)

- Designed and implemented a behavioral task to study personality inferences from faces without linguistic cues, ensuring participants' clarity, engagement, and sustained attention during online participation.
- Built an analysis pipeline for data from >3,000 participants, integrating image preprocessing, CNN-based feature extraction, dimensionality reduction, and representational similarity analysis to map high-dimensional behavioral data onto interpretable personality dimensions.

Dynamic structures of personality and emotion over time (ongoing)

- Analyzed longitudinal survey data from >1,800 participants using multivariate statistical modeling and Structural Equation Modeling to identify psychological traits and states.
- Developed data-driven approaches to construct and validate psychological structures, reducing dependence on predefined theoretical models.

PUBLICATIONS:

- **Xu, Y.**, Keles, U., Lin, C., & Adolphs, R. (2025). Trait judgments of faces using a task without word labels. *PsyArXiv.*
- Adolphs, R., & **Xu, Y.** (2024a). Opinion: Which animals have personality? *Personality Neuroscience*, *7*, e4.
- Adolphs, R., & **Xu, Y.** (2024b). PRECOMMENTARY: Animal personality needs animal sentience. *Animal Sentience*, *9*(34), 2.
- Tang, S., Lee, T. S., Li, M., Zhang, Y., **Xu, Y.**, Liu, F., Teo, B., & Jiang, H. (2018). Complex pattern selectivity in macaque primary visual cortex revealed by large-scale two-photon imaging. *Current Biology*, *28*(1), 38–48.

EXPERIENCE & OUTREACH:

Resident Associate Sep 2020 – Jun 2024

Avery House, California Institute of Technology

- Mentored and supported undergraduate students in academic, social, and personal development

- Fostered an inclusive, collaborative residential community and strengthened leadership and communication skills.

Teaching Assistant Mar – Jun 2022

Biology and Biological Engineering, California Institute of Technology

- Assisted instruction for "Introduction to Neuroscience" by holding office hours, grading homework, and writing exam questions.

Research Assistant May 2017 – May 2019

Advisor: Dr. Tai-Sing Lee, Center for the Neural Basis of Cognition, Carnegie Mellon University

- Applied graphical models to neural data from 1,200 monkey V1 neurons.
- Programmed machine learning neural networks to analyze scene statistics of 1.5 million images.
- Implemented an image generation and computational simulation tool for experiments on visual systems.

Teaching Assistant Summer 2017

School of Computer Science, Carnegie Mellon University

- Assisted instruction for "Introduction to Computer Systems" by holding office hours, grading homework, and writing exam questions.

Volunteer Teaching Assistant Jul 2017

- Provided 30 hours of 1-on-1 mentorship to educators on Python programming and computational thinking to promote computer science education in high schools.

Robotics & English Tutor for High School Students Jun – Dec 2016

- Designed and taught 154 instructional hours on Robotics programming and English communication for 23 high school students.

Undergraduate Researcher Aug 2015 – May 2016

Phage Genomics Research Course, Carnegie Mellon University & SEA-PHAGES

- Isolated and purified a novel bacteriophage and conducted genome annotation and bioinformatic analyses.
- Designed and conducted an experiment examining how environmental factors influence plaque morphology.

ADDITIONAL PROJECTS:

Machine Learning Model for Motion Speed Prediction May 2018

- Trained DCNN and LSTM networks on mice neural data to model temporal dependencies between past neural activity and current movement, in a team of 4.

Machine Learning Model for Labeling Human Emotions March 2018 – May 2018

- Built SVM models to automatically classify human participants' emotions from video recordings of their psychological survey sessions, in a team of 3.

Web Design: Infectious Disease Alert and Report Feb 2018

- Developed a web application that allows users to report and receive alerts about infectious disease.
- Implemented machine learning algorithms to assist in disease diagnosis and predict outbreak trends, in a team of 4.

Machine Learning Model for Predicting Song Titles Feb – May 2017

- Implemented NLP algorithms to predict song titles from lyrics, in a team of 4.

Robotics: Multipurpose Mobile Manipulator Oct 2015 – Jan 2017

- Assembled and programmed a mobile robot with task-performing arms; designed and 3D-printed structural components, in a group of 4

Web Design: Networking Website April – May 2016

- Programmed a social networking platform allowing users to join each other's events.

Physics: Modeling Pendulum Waves Nov – Dec 2015

- Programmed a masses-on-spring model to simulate pendulum wave motion, in a team of 2.

SKILLS:

Programming Languages:

Python (Proficient); HTML/CSS, JavaScript, MATLAB, and R (Intermediate); Java and C (Familiar).

Data Analyses:

NumPy, pandas, R packages, and MATLAB toolboxes.

Machine Learning:

Scikit-learn, PyTorch, TensorFlow.

Other Tools:

Git, LaTeX, Bash, Linux-based clusters, Django, ThorLabs (2-photon imaging), Fiji, CUDA, Slurm, RhinoCAD, Makerware, DNA Master

Honors/Awards:

Chen Graduate Fellowship 2019 – 2020

University Honor and Senior Leadership Recognition 2019

Carnegie Mellon University

Awarded Membership of Phi Beta Kappa 2019

Awarded Membership of Phi Kappa Phi 2019

Undergraduate Research Fellowship in Computational Neuroscience 2017 – 2018

Center for the Neural Basis of Cognition, Carnegie Mellon University

Awarded Membership of the Physics Honor Society Sigma Pi Sigma 2017