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EDUCATION

University of Chicago 2023-2025
Master of Arts in Computational Social Science *GPA: 3.88/4*

Coursework Introduction to AI: Deep Learning and GAI, Mathematical Foundations of Machine Learning
Bayesian Machine Learning with Generative AI Applications, Computational Content Analysis
Large-Scale Computing for the Social Sciences, Computational Linguistics, Web Development
Advanced Topics in Human Neuroimaging, Neuroscience of Narrative, Theoretical Neuroscience

Honors Maroon Research Scholarship (2023–24)
Social Science Promise Scholarship (2023–24)

The Chinese University of Hong Kong 2019–2023
Bachelor of Science in Applied Psychology (First Class Honors) *GPA: 3.89/4*

Coursework Cognitive Psychology, Abnormal Psychology, Decision-Making Process,
Quantitative Methods and Experimental Design, Research Method and Writing

Honors CLASS A Academic Performance Scholarship (2021–22, 2020–21)
CLASS B Academic Performance Scholarship (2019–20)
Dean's List (2021–22, 2020–21, 2019–20)
CUHKSZ Undergraduate Research Awards (approximately $1,000 research grant)

RESEARCH INTERESTS

Computational Psychiatry Bayesian Inference, Cognitive Modeling, Amortized Likelihood Estimation
Precision Psychiatry, Spontaneous Thought Processes

Machine Learning and AI Multi-Modal Data Integration, Interpretable Machine Learning in Psychiatry
AI Chatbots in Mental Health, Digital Psychiatry

Creativity Cognitive Flexibility, Creative Expression and Mental Health

SKILLS

Programming Python, R, MATLAB, SQL, C++, LaTeX
HTML/CSS, JavaScript, jsPsych, Stan, Mplus

Libraries/Software Machine/Deep Learning (**Keras**, **PyTorch**, **Scikit-Learn**, **Tensorflow**)
Bayesian Computational Modeling (**PyStan**, **PyMC**, **RStan**)
Big Data/High Performance Computing (**Cython**, **PySpark**, **Dask**)
Web Scraping (**Request**, **Selenium**), Web Development (**flask**, **React**)
Natural Language Processing (**Gensim**, **NLTK**, **spaCy**)
Neuroimaging (**fMRIPrep**, **Nipype**, **Nilearn**, **SPM**, **FSL**, **FreeSurfer**)
Data Wrangling (**dplyr**, **Pandas**), Scientific Computing (**NumPy**, **Scipy**)
Visualization (**ggplot**, **Matplotlib**, **Seaborn**, **Vega-Altair**)

Questionnaire Qualtrics, Prolific, Credamo

Crowdsourcing Amazon Mechanical Turk, CloudResearch

Language Chinese (native), English (IELTS 8; GRE 332+5)

RESEARCH EXPERIENCE

Division of Digital Psychiatry, Beth Israel Deaconess Medical Center Jul 2025–Present
Research Assistant (Principal Investigator: John Torous) *Boston, Massachusetts*

- **Lead** the green space project on the relationship between dynamic green space exposure (captured by GPS), stress (via Ecological Momentary Assessment), and circadian rhythm (informed by accelerometer) using advanced longitudinal modeling (an invited article from the American Journal of Psychiatry).
- **Lead** a multimodal research project investigating social functioning biomarkers in psychosis, integrating active smartphone surveys, passive sensor data, and neuroimaging to examine anhedonia, social withdrawal patterns, and psychotic symptoms.
- **Contribute** to sleep estimation project using Bayesian Hidden Markov Models with smartphone sensor data, providing methodological expertise, conducting data preprocessing and cleaning, and co-authoring introduction and discussion sections.

Motivated Learning and Memory Laboratory, McLean Hospital Jul 2025–Present
Research Assistant (Principal Investigator: Dr. Daniel Dillon) *Boston, Massachusetts*

- **Conduct** ROI-based fMRI analyses of striatal reward responses in Major Depressive Disorder and healthy controls.
- **Integrate** neuroimaging data with Reinforcement Learning Drift Diffusion Model parameters from Probabilistic Selection Task to examine neural-behavioral markers of reduced reward responses.

Laboratory of Neural Computation and Cognition, Brown University Jun 2024–Present
Research Assistant (Principal Investigator: Dr. Michael Frank) *Providence, Rhode Island*

- **Assist** in a computational psychiatry project that generates parameter estimates of inhibitory control as one independent variable to predict suicidal ideation trajectories in teenagers over an 18-month period (in collaboration with Dr. Richard Liu's lab at Harvard Medical School).
- **Design** a comprehensive pipeline for Hierarchical Bayesian Modeling via PyMC, encompassing data simulation, likelihood definition, model fitting, and model checking.
- **Define** likelihood functions for go, stop-respond, and successful inhibition trials in stop signal task using PyMC.
- **Apply** No-U-Turn Sampler (NUTS; an advanced variant of the Hamiltonian Monte Carlo algorithm) to estimate group-level and subject-level parameters.
- **Conduct** posterior predictive checks, convergence diagnostics, and sensitivity analyses to ensure the robustness and reliability of the model.
- **Incorporate** the PyMC model of the stop signal task into HSSM package before fitting it to empirical data.

Wu Lab of Social Decision-Making, Icahn School of Medicine at Mount Sinai Jun 2024–Dec 2024
Summer Research Assistant (Principal Investigator: Dr. Herbert Wu) *New York, New York State*

- **Assisted** in a computational neuroscience project on building artificial neural network (ANN) for the delayed match to sample (DMS) task.
- **Updated** the original vanilla multi-layer recurrent neural network (RNN) to the latest version of tensorflow.
- **Built** RNN following Dale's principle for the DMS task via tensorflow, including Column Excitation-Inhibition approach (constraining entire columns of the weight matrices to be of the equal sign) and Dale's ANNs approach (ANNs with separate populations of excitatory and inhibitory units).

Bakkour Memory and Decision Lab, University of Chicago Sept 2023–May 2025
Master Thesis Project (Advisor: Dr. Akram Bakkour) *Chicago, Illinois*

- **Investigated** mood-creativity linkage within the Multi-Trial Creative Ideation (MTCI) framework.
- **Adopted** the incompleteness drawing task to examine the influence of mood activation levels (happiness and calmness) on creative outputs.
- **Hypothesized** that positive, activating mood promotes the flexibility aspect of creativity (the ability to think across a wide range of possibilities), which in turn enhances the originality aspect of creativity (uniqueness and novelty of the completed drawings).

- **Employed** Compositional Stroke Embedding (CoSE) Model to capture the flexibility aspect of creativity via the dynamic progression of strokes in the incompleteness drawing task.
- **Leveraged** Divergent Semantic Integration (DSI) to quantify the flexibility aspect of creativity by quantifying the diversity of ideas/concepts participants connect during creative ideation processes.
- **Utilized** Automated Drawing Assessment (AuDrA) model to measure the originality aspect of creativity.
- **Writed** JsPsych code to build the experimental website, incorporating mood induction via film clips, the incompleteness drawing task, and narratives on the thought process behind the drawings.
- **Nominated** for *Best Thesis Award* of the Computational Social Science program.

Bakkour Memory and Decision Lab, University of Chicago Sept 2023–May 2025
Research Assistant (Principal Investigator: Dr. Akram Bakkour) *Chicago, Illinois*

- **Assisted** in a project on how feature-based representation may facilitate generalizable predictive knowledge.
- **Implemented** a scalable deep learning analysis pipeline for feature extraction in the robot drawing task, tailored for upcoming deployment on the Midway3 High Performance Computing Cluster for large dataset analysis.
- **Employed** Tensorflow and Scikit-Learn to construct and validate predictive Convolutional Neural Networks models, streamlining data preprocessing, analysis, and visualization processes.

STAR Lab, Southern University of Science and Technology Jun 2023–Jun 2024
Research Assistant (Principal Investigator: Dr. Jinchu Hu) *Shenzhen, China*

- **Built** the early version of STAR lab website, including introduction of lab research interests, published works, description of team members, and ongoing projects.
- **Wrote** MATLAB and Stan syntax to build 12 reinforcement models (variants of The Rescorla–Wagner and Pearce–Hall learning models) studying reward reversal learning among patients with major depressive disorder.
- **Conducted** parameter recovery, model estimation (including maximum likelihood estimation and Hierarchical Bayesian Modeling), model comparison, and posterior predictive check for the reward reversal learning project.
- **Performed** Hierarchical Bayesian Modeling analysis on the effect of oxytocin on fear reversal among mentally healthy participants, encompassing model fitting (using Pearce–Hall learning model) and group comparison of treatment and gender effects (using highest density interval of group parameter differences).

Undergraduate Research Awards Program, The Chinese University of Hong Kong Mar 2022–Jun 2023
Project Leader (Supervisor: Dr. Shi Yu) *Shenzhen, China*

- **Received** approximately $500 grant to support the study.
- **Initiated** a research project studying the mechanism by which academic stress negatively influences sleep quality.
- **Adapted** a two-factor academic stress scale for Chinese college students in the context of academic involution.
- **Validated** the factor structure of the 10-item academic stress scale using Mplus.
- **Conducted** path analyses using the lavaan package in R and the PROCESS macro in SPSS.
- **Confirmed** (a) two different emotion regulation processes leading to academic stress (i.e., a negative effect of cognitive reappraisal on academic stress whereas a positive effect for expressive suppression) and (b) the serial mediation of social comparison and bedtime procrastination, linking academic stress to sleep quality.

Dr. Zhicheng Lin's Lab, The Chinese University of Hong Kong Sept 2022–May 2023
Research Assistant (Principal Investigator: Dr. Zhicheng Lin) *Shenzhen, China*

- **Supported** a research project examining the characteristics and development pattern of psychological research through the lens of metascience.
- **Coded** issues from APA and APS (two top psychology journals) over the past few years based on authorship (e.g., number of authors, nations represented) and sample information (e.g., sample size, demographics).
- **Calculated** the Simpson diversity index to determine the racial composition of selected authors and editors from APA and APS using the vegan package in R.

Dr. Shi Yu's Lab, The Chinese University of Hong Kong Sept 2021–May 2023
Research Assistant (Principal Investigator: Dr. Shi Yu) *Shenzhen, China*

- **Contributed** to a longitudinal study on Chinese middle school students' study motivation and meaning of life.

- **Translated** scale items measuring authentic inner compass from Chinese to English.
- **Performed** data cleaning to ensure data quality using Excel and SPSS.
- **Identified** careless responses using data screening methods such as long-string index, psychometric synonyms and antonyms, and even-odd consistency via the careless package in R.
- **Assisted** in designing a questionnaire consisting of 14 scales to measure meaning of life and related constructs.

Pembroke College Summer Research Program, Cambridge University Jul 2021–Aug 2021
Program Participant (Supervisor: Marta Beneda) *Shanghai, China*

- **Wrote** a 6000-word review paper on factors predicting intentions to use and reuse online food delivery.
- **Conducted** literature review and summarized theoretical/conceptual frameworks in 16 selected papers.
- **Synthesized** the common factors predicting people's intentions to use and reuse online food delivery and interpreted the similarity and difference in predictors of intentions to use and reuse
- **Evaluated** the strengths and weaknesses in methodology and study design in selected studies and suggested factors and also moderators to be included in future research.
- **Received** first-class marks for the project.

PUBLICATIONS

Published Work

Cong, **T.**, Kuang, Y., Bao, Y., & Yu, S. (2024). Effects of perceived academic stress on sleep quality among chinese college students: Mediating effects of social comparison, bedtime procrastination, and the protective role of emotion regulation. *Current Psychology*, *43*(40), 31327–31342. https://doi.org/10.1007/s12144-024-06707-w

Thesis

Cong, **T.** (2025). *The art of positivity in drawing: Unveiling the impact of positive mood states on visual creativity via deep learning* [Master's Thesis]. University of Chicago. https://doi.org/10.6082/uchicago.15458

Under Review

Byun, A. J. S., Li, Y., **Cong**, **S.**, Dhima, A., Wang, S., Flathers, M., & Torous, J. B. (2025). *Sleep estimation from low frequency smartphone sensors via bayesian hidden markov model*. Manuscript submitted for publication at *Nature Mental Health*.

In Preparation

Byun, A. J. S., **Cong**, **S.**, Franklin, R., Liu, L., Allie, O., & Torous, J. (2025). *Multi-scale analysis of green space exposure effects on stress and circadian rhythms: Evidence from amp scz program* [Authors listed alphabetically; final order to be determined]. Manuscript in preparation.

Cong, **S.**, Li, C. R., Vaidya, V., & Wang, Z. (2025). *Brain entropy mapping as a neurobiological framework for understanding cocaine use disorder: From diagnostic biomarkers to treatment response prediction* [Authors listed alphabetically; final order to be determined]. Manuscript in preparation.

CONFERENCE PRESENTATIONS

Poster Presentations

Cong, **S.**, & Bakkour, A. (May 2025). *The art of positivity in drawing: Unveiling the impact of positive mood states on visual creativity via deep learning*. Society for the Neuroscience of Creativity, Paris, France.

TEACHING EXPERIENCE

University of Chicago Jan 2025–Present
Teaching Assistant, Computer Science with Social Science Applications 2 *Chicago, Illinois*

- **Design** a GitHub collaboration tutorial, covering the advantages and trade-offs of different collaboration approaches using Git and GitHub with in-class demonstration.
- **Facilitate** group discussions during lab sessions to encourage critical thinking and problem-solving.

- **Provide** technical and logistic support for students' final group project.
- **Grade** assignments and exams and provide constructive feedback to support student learning.
- **Hold** regular office hours to address technical questions and offer personalized tutoring.

University of Chicago Sept 2024–Dec 2024
Teaching Assistant, Computer Science with Social Science Applications 1 *Chicago, Illinois*

- **Led** bi-weekly lab sessions with interactive demonstrations to guide students through programming exercises.
- **Prepared** detailed lab slides and coding examples to clarify complex topics and enhance student engagement.
- **Facilitated** group discussions during lab sessions to encourage critical thinking and problem-solving.
- **Graded** assignments and exams and provide constructive feedback to support student learning.
- **Held** regular office hours to address technical questions and offer personalized tutoring.

INTERNSHIP EXPERIENCE

iResearch Consulting Group Jun 2022–Aug 2022
Strategy Consulting Intern *Guangzhou, China*

- **Summarized** interviews with opinionated leaders in manufacturing and fast-moving consumer goods industries.
- **Performed** desk research on retail technologies and digital marketing in the wine industry.
- **Analyzed** traffic structure of different channels and tracked customer cross-channel journey, followed by A/B tests to compare between-group differences on customer aims of purchase and Gross Merchandise Value contribution in Excel.
- **Calculated** shapely value to quantify channel attribution and spillover effects of e-commerce platforms in Excel.
- **Conducted** market basket analysis with apriori algorithm (related goods) and performed logistic regression to determine the significant predictors of purchasing and repurchasing of confectionary goods using R.
- **Wrote** the final report to propose indications on (a) market opportunities for 7 different consumer groups and (b) optimization of 7 touchpoints and ways to speed up consumer conversion on confectionary goods.