YOU (LILIAN) CHENG

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Summary of Qualifications

- Ph.D. candidate with 10 years of quantitative research experience in designing, implementing, and automating data collection, data processing, and data evaluation from multiple sources in cognitive science
- Extensive experience in using scripting language (e.g., Python and R) and query language (e.g., SQL)
- Proficient in oral and written communication as evidenced by 4 publications and 10+ conference talks

Education

Ph.D. Candidate, Cognitive Neuroscience Sept. 2019 – Present
University of California, Irvine (UCI), Irvine, CA, USA

M.S., Cognitive Neuroscience Oct. 2020
University of California, Irvine (UCI), Irvine, CA, USA

M.A., Geography Sept. 2019
University of California, Santa Barbara (UCSB), Santa Barbara, CA, USA

B.S., Psychology June 2014
South China Normal University (SCNU), Guangzhou, Guangdong, China

Projects

Travel Direction as a Fundamental Component of Human Navigation Sept. 2017 – Present
Spatial Neuroscience Lab & Cognitive Anteater Robotics Lab, UCI *Irvine, CA*

- Design experiments to detect neural networks for travel direction using fMRI and virtual reality
- Detect travel direction network distribution in the brain using customized pattern classification
- Establish computational models of direction processing using recurrent neural network (RNN)
- Implemented a series of psychophysics experiments on motion adaptation using virtual reality

Big Data Analyses on Gender Differences in Navigation Paths Jan. 2019 – Present
Spatial Neuroscience Lab, UCI & Spatial Thinking Lab, UCSB & Spiers Lab, UCL *Irvine, CA*

- Utilize Jupyter Notebook (tensorflow) to extract and organize demographic and movement data
- Conduct deep learning analyses using convolutional neural networks (CNN) to investigate the relationship between gender and navigation patterns
- Built SQL databases (SQLite3, JSON) on remote servers to store approximately 1.2TB data from a phone-based navigation game (Sea Hero Quest)

Data Mining on Individual Differences in Neural Signals for Directions Apr. 2020 – Present
Spatial Neuroscience Lab, UCI *Irvine, CA*

- Investigate individual differences in navigation direction using over 90 young adults' fMRI data collected from navigation tasks in a virtual maze
- Use general linear model, machine learning (nilearn, scikit-learn, etc), clustering, and searchlight, to forecast human navigation path from brain activation

Relevant Skills

Quantitative Skills: Mathematical Statistics & Probability, Psychology Measurement & Statistics, Big Data Analysis, Discrete Mathematics, Machine Learning, Neural Networks, Linear Algebra, Time Series, Spatial Analysis, Network Analysis, Cognitive Robotics, Statistics in fMRI Data Analysis, Bayesian Statistics, Reinforcement Learning
Medical Quantitative Skills: Psychology Measurement & Statistics, Statistics in fMRI Data Analysis
Spatial Analysis Technology: ArcGIS
Programming Skills: Python, MATLAB, R, Unix Shell, SQL
Software: Blender, 3D Max, World Vizard, SPSS, E-prime, HTML, Photoshop, Illustrator, WordPress, Webots
Language Skills: Mandarin (native), English (fluent), Cantonese (conversational), Spanish (entry)

Relevant Internships

Data Science Instructor for Guided Projects Aug. 2020 – Present
Coursera Inc. *Remote*
- Create hands-on data science courses in R and Python with global learners
- Published data science instructor on Coursera *You (Lilian) Cheng*

Teaching Assistant June 2020 – July 2020
Neuromatch Academy Inc. - a worldwide online computational neuroscience summer school *Remote*
- Provided feedback to evaluate and improve course material as a pre-pod member
- Taught 10 students across the world online about applying computational methods (e.g., general linear model, dimensionality reduction, dynamic systems, etc.) to neuroscience research using python

Data Science Intern June 2019 – Sept. 2019
National Center for Ecological Analysis and Synthesis (NCEAS) *Santa Barbara, CA*
- Conducted network analyses on publication and citation over 4 decades in 28 national research sites by extracting data from API (crossref) using R and Python
- Hosted 3 workshops to diverse groups on learning newly developed R functions

Select Research Experience

Graduate Student Researcher Jan. 2021 – Present
Cognitive Anteater Robotics Lab, UCI *Irvine, CA*
- Utilize Matlab for building computational neuroscience models and Webots software for virtual robots simulation
- Build computational models of human path integration using recurrent neural networks
- Test spatial cognition theories by simulating neuromodulation system of virtual robots with reinforcement learning

Graduate Student Researcher July 2017 – Present
Spatial Neuroscience Lab, UCSB & UCI *Santa Barbara, CA & Irvine, CA*
- Utilize Jupyter Notebook for fMRI data analysis and Vizard software for virtual reality data collection
- Design, develop, and conduct multiple projects on human navigation and mental rotation using psychophysics, neuroimaging, virtual reality, and computational models
- Analyze and interpret individual differences in spatial abilities from a multi-disciplinary lens using GLM, pattern classification, statistics (regression, t-test, anova), hadoop spark framework - deep learning, resulting in enhanced insights on relationships between variables

Awards & Honors

- 2021 Roger W. Russell Scholar's Award. *Center for the Neurobiology of Learning and Memory (CNLM), UCI*
- 2021 Audience Choice Award. *Associated Graduate Students (AGS) Virtual Symposium, UCI*
- 2021 1st Place Winner of the Business Pitch Competition. *GPS STEM & Beall Applied Innovation, UCI*
- 2020 Trainee Professional Development Award (TPDA). *Society for Neuroscience*
- 2020 Runner-Up in WaiDATATHON for Sustainable Future. *WaiACCELERATE & Women in AI (WAI)*

Leadership & Outreach

Ambassador Program Adult Outreach Committee Co-Chair Oct. 2019 – Present
UCI Center for Neurobiology of Learning and Memory (CNLM) *Irvine, CA*
- Host panels on "sleep and mental health" and "addiction and mental health" toward Irvine adult community
- Promote "Health and Education" lectures on aging, lifestyle, and the brain toward Irvine senior community

Augmented Reality Sandbox Operator Jan. 2019 – Sept. 2019
Department of Geography, UCSB *Santa Barbara, CA*
- Displayed augmented reality sandbox during departmental outreach events to a various of audience including k-12 students, undergraduate students and their parents, graduate students, and faculty

Geography Outreach Group Member Sept. 2017 – Sept. 2019
Department of Geography, UCSB *Santa Barbara, CA*
- Organized Geography Awareness Week: connect graduate students and professors from UCSB to give geography-related lectures to local K-12 schools
- Organized geography outreach classes on remote sensing at Tech Savvy: teaching girls in grades six through nine to explore STEM education and related careers
- Promoted Annual Geography Trivia Night