

# ZHILIAO ZHANG

## *Curriculum Vitae*

December 2023

### Contact Information

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### Academic Positions

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Assistant Professor	Darden School of Business, Marketing Area <b>University of Virginia</b>	2022-present
Assistant Professor (by courtesy)	Department of Psychology <b>University of Virginia</b>	2022-present
Postdoctoral Scholar	Haas School of Business Social Science Matrix <b>University of California, Berkeley</b>	2016-2022
	Department of Neurology <b>University of California, San Francisco</b>	2016-2017

### Education

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Ph.D.	<b>Yale University</b>	Neuroscience	2016
M.Phil.	<b>Yale University</b>	Neuroscience	2013
B.Sc.	<b>Tsinghua University</b>	Biological Sciences (with Distinction)	2010

### Awards and Fellowships

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<i>Best Talk Award</i>	2020
The 18th Annual Meeting of Society for Neuroeconomics	
<i>Best Poster Award</i>	2020
The 145th Annual Meeting of the American Neurological Association	

<i>Career Transition Award</i> Scientific Research Network for Decision Neuroscience & Aging	2019
<i>Award for Best Poster Presentation</i> The 7th Annual Interdisciplinary Symposium on Decision Neuroscience	2017
<i>Trainee Professional Development Award</i> Society for Neuroscience	2015
<i>Neuroeconomics Summer School Full Scholarship</i> New York University Shanghai	2015
<i>Conference Travel Fellowship</i> Yale Graduate Student Assembly	2014, 2015
<i>Kavli Graduate Fellowship in Neuroscience</i> The Kavli Foundation	2012-2013
<i>China Scholarship Council-Yale World Scholars Fellowship</i> The China Scholarship Council	2010-2012
<i>National Scholarship</i> The Ministry of Education, P. R. China	2009
<i>First-Class Scholarship</i> Tsinghua University	2005-2007, 2009

## Research Interests

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### *General Areas*

Consumer Research  
Marketing  
Neuroeconomics  
Cognitive Neuroscience  
Natural Language Processing  
Law and Neuroscience

### *Techniques*

Computational modeling  
Functional neuroimaging  
Vector semantics  
Neuropharmacology

## Publications

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#denotes corresponding author(s) \*denotes equal contribution §denotes mentee

Google Scholar profile: <https://scholar.google.com/citations?user=4qKYm5AAAAAJ&hl=en>

## Journal Articles

Bartholomew, M., **Zhang, Z.**, Hsu, M., Kayser, A. S., & van Horen, F. A new addition to the trademark litigator's toolkit: A neuroscientific index of mark similarity.

**Zhang, Z.**<sup>#</sup>, §Good, M., §Kulikov, V., van Horen, F., Bartholomew, M., Kayser A. S.<sup>#</sup>, & Hsu, M.<sup>#</sup> (2023) From scanner to court: Toward a neuroscientifically informed "reasonable person" test of trademark infringement. *Science Advances*, 9(6), abo1095.  
- Media coverage: *Fortune*, *Fast Company*, *Big Think*, *Law360*, *World Trademark Review*, *The Daily Californian*

§Maboudian, S., Hsu, M., & **Zhang, Z.**<sup>#</sup> (2022). Visualizing and quantifying longitudinal changes in verbal fluency using recurrence plots. *Frontiers in Aging Neuroscience*, 14.

**Zhang, Z.**<sup>#</sup>, §Wang, S., §Good, M., §Hristova, S., Kayser A. S.<sup>#</sup>, & Hsu, M.<sup>#</sup> (2021). Retrieval-constrained valuation: Toward prediction of open-ended decisions. *Proceedings of the National Academy of Sciences*, 118(20).  
- Media coverage: *The Hill*, *Medical XPress*, *Guokr*

Furman, D. J., **Zhang, Z.**, Chatham, C., §Good, M., Badre, D., Hsu, M., & Kayser A. S. (2021). Augmenting frontal dopamine tone enhances maintenance over gating processes in working memory. *Journal of Cognitive Neuroscience*, 33(9), 1753-1765.

**Zhang, Z.**, Chandra, S., Kayser, A. S., Hsu, M., & Warren, J. (2020). A hierarchical Bayesian implementation of the experience-weighted attraction model. *Computational Psychiatry*, 4, 40-60.

**Zhang, Z.**<sup>#</sup>, Coppin, G.<sup>#</sup>. (2018). To what extent memory could contribute to impaired food valuation and choices in obesity? *Frontiers in Psychology*, 9, 2523.

**Zhang, Z.**, Fanning, J., §Ehrlich, D. B., §Chen, W., Lee, D., & Levy, I. (2017). Distributed neural representation of saliency controlled value and category during anticipation of rewards and punishments. *Nature Communications*, 8, 1907.

**Zhang, Z.**, Mendelsohn, A., Manson, K. F., Schiller, D., & Levy, I. (2015). Dissociating value representation and inhibition of inappropriate affective response during reversal learning in the ventromedial prefrontal cortex. *eNeuro*, 2(6), ENEURO-0072.  
- Featured in Viewpoints Q&A at *Nature Neuroscience*

**Zhang, Z.**, Manson, K. F., Schiller, D., & Levy, I. (2014). Impaired associative learning with food rewards in obese women. *Current Biology*, 24(15), 1731-1736.  
- Media coverage: *BBC*, *Los Angeles Times*, *The Baltimore Sun*, *The Orlando Sentinel*, *Capital Gazette*, *ScienceDaily*, *The Times of India*, *Guokr*, *Canadian Broadcasting Corp.*, *China National Radio*, *News Ghana*  
- Featured in commentary by neuroscientists Terry Davidson and Ashley Martin and in News & Comment at *Nature Reviews Neuroscience*

## Opinion Editorials

**Zhang, Z.** (February 13, 2023). A less biased way to determine trademark infringement? Asking the brain directly. *The Conversation*.

Hsu, M., **Zhang, Z.**, & Kayser, A. S. (2021). What marketers often miss when measuring the value of being top of mind. *INSights - Consumer Neuroscience in Business*, 34, 14-17.

## Invited Commentaries and Book Reviews

**Zhang, Z.** (2012). Book review for *The Age of Insight: The Quest to Understand the Unconscious in Art, Mind, and Brain, From Vienna 1900 to the Present*. *The Yale Journal of Biology and Medicine*, 85(4), 564.

## Selected Work in Progress

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\*denotes equal contribution      §denotes mentee

**Zhang, Z.**, §Hristova S., Kayser A. S., & Hsu, M. Metacognition and information seeking in open-ended decisions.

**Zhang, Z.**, §Maboudian, S., Jackson A., Ngo, S., Manivannan, M., Kayser, A. S., Hsu, M., & Chiong, W. Mechanistic contributions of memory to decision-making impairments in Alzheimer's disease.

§Chen, P.\*, Hsu, M.\* & **Zhang, Z.\*** Disentangling real vs. nominal changes in consumer brand perceptions over time with dynamic word embeddings.

§Wu, Q., **Zhang, Z.**, Kayser A. S., & Hsu, M. Flexible reconfigurations of large-scale brain networks in decisions with predefined vs. self-generated options.

## Research Grants

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UC Berkeley Fisher Center of Business Analytics Research Grant      2019-2020  
*Predicting Brand Equity and Top-of-Mind Awareness using Large-Scale Text Corpora*  
\$10,000

This proposal applies insights from cutting-edge big data methods, grounded in validated cognitive processes, to capture consumer awareness across segments and inform managerial actions.

Role: Co-Investigator (with Hsu)

Scientific Research Network for Decision Neurosci. & Aging Pilot Grant 2018–2019  
*Age-related changes in memory-based choices and its neural basis*      \$47,100

This proposal aims to understand the quantitative relationship between semantic memory, valuation, and choices and to characterize its changes across the lifespan.  
 Role: Subaward PI (from Samanez-Larkin parent award NIH/NIA R24-AG054355)

UC Berkeley Fisher Center of Business Analytics Research Grant                      2018-2019  
*Big Data Approaches to Understanding Brand Memory*                                      \$10,000

This proposal aims to leverage recent advances in machine learning, natural language processing, and consumer neuroscience to improve predictive models of memory-based consumer choice.

Role: Co-Investigator (with Hsu)

## Invited Talks

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2024

<i>McDonough School of Business</i>	Georgetown University
<i>The Marketing Group</i>	London School of Econ. and Pol. Sci.
<i>Booth School of Business</i>	University of Chicago
<i>Neuroscience and Law Seminar Series</i>	Michigan State University
<i>UK Copyright &amp; Creative Economy Centre</i>	University of Glasgow
<i>School of Business</i>	University of Illinois Chicago

2023

<i>Centre for Res. in the Behav. Sci.</i>	University of Nottingham
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2022

<i>Neurology Grand Rounds</i>	University of Virginia
<i>Department of Psychology</i>	University of Virginia
<i>School of Management</i>	Fudan University
<i>School of Psychology and Cog. Sci.</i>	East China Normal Univ.
<i>Anderson School of Management</i>	UCLA

2021

<i>School of Management</i>	Univ. Sci. Tech. of China
<i>Department of Industrial Engineering</i>	University of Chile
<i>Darden School of Business</i>	University of Virginia
<i>Department of Marketing, Business Economics, and Law</i>	University of Alberta
<i>The Shansby Marketing Seminar</i>	UC Berkeley
<i>Behavioral Science Seminar</i>	UC Berkeley

2019 and before

<i>Neuroeconomics Forum</i>	Yale University
<i>The Business and Marketing Program</i>	New York Univ. Shanghai
<i>School of Management</i>	Zhejiang University
<i>The Shansby Marketing Seminar</i>	UC Berkeley

*Psychology and Economics Lunch*  
*College of Psychology*  
*McGovern Institute for Brain Research*  
*Rotman School of Management*

UC Berkeley  
Shenzhen University  
Peking University  
University of Toronto

## Select Conference Presentations

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### **Association for Consumer Research (ACR)**

- (Oct, 2022) Isolating representations from processes: An application for quantifying product imitation without self-report
- (Oct, 2022) Forecasting consumer brand perception using large-scale text analysis
- (Oct, 2021) Mapping 25 years of consumer knowledge from text corpora
- (Oct, 2019) Predicting consumer brand memory across demographic segments
- (Oct, 2018) Predicting memory-based consumer choice from recall and preferences
- (Oct, 2018) Predicting consumer brand recall and choice using large-scale text corpora

### **Theory + Practice in Marketing Conference (TPM)**

- (Jun, 2021) Mapping 25 years of consumer knowledge from text corpora
- (May, 2019) Large-scale inference of brand memory from text corpora

### **Society for Consumer Psychology (SCP)**

- (Mar, 2020) Predicting consumer brand memory across demographic segments

### **Future of Brands Conference**

- (Dec, 2019) Predicting consumer brand recall using large-scale text corpora

### **Behavioral Insights from Text Conference**

- (Jan, 2019) Predicting consumer brand recall and choice using large-scale text corpora

### **Society for Neuroeconomics & Consumer Neuroscience Satellite Symposium**

- (Oct, 2021) Mechanistic contributions of memory to decision-making impairments in Alzheimer's disease
- (Oct, 2020) Retrieval-constrained valuation: Toward prediction of open-ended decisions
- (Oct, 2018) Predicting memory-based decisions

### **Economic Science Association (ESA)**

- (Oct, 2019) Predicting memory-based choices

### **Interdisciplinary Symposium on Decision Neuroscience (ISDN)**

- (Jun, 2019) Mnemonic constraints on value-based decision making
- (Jun, 2017) Distributed neural representation of value, saliency, and category during anticipation of rewards and punishments

## **Text Analysis Across Domains Conference (TextXD)**

- (Dec, 2022) Did consumers perceive Microsoft as more innovative than Apple in 2005? Recovering how consumers perceived brands in the past using diachronic text analysis
- (Dec, 2019) Predicting consumer brand recall and choice using large-scale text corpora

## **Teaching Experience**

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### *Instructor*

Consumer Insights in a Data-Driven World (MBA)	2023-present
Core Marketing II (MBA)	2023-present
Core Marketing I (MBA)	2022-present
<i>Darden School of Business, University of Virginia</i>	

### *Guest lecturer*

Intellectual Property: Current Controversies (J.D.; instructor: Mira T. Sundara Rajan) <i>School of Law, UC Davis</i>	2020
Marketing Research (MBA; instructor: Ming Hsu) <i>Haas School of Business, UC Berkeley</i>	2019
Neuromarketing (undergraduate; instructor: Ming Hsu) <i>Haas School of Business, UC Berkeley</i>	2019
Empirical Research Seminar (J.D.; instructor: Tom R. Tyler) <i>Yale Law School</i>	2016

### *Teaching Fellow*

Neuroeconomics for Economists (instructor: Ifat Levy) <i>Department of Economics, Yale University</i>	2016
The Human Brain (instructor: Gregory McCarthy) <i>Department of Psychology, Yale University</i>	2014
Introduction to the Human Brain: Brain and Thought (instructor: Amy Arnsten) <i>Department of Psychology &amp; Cognitive Science Program, Yale University</i>	2011, 2012

## **Patent**

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Hsu, M., Kayser, A., and **Zhang, Z.** System for determining trademark similarity. U.S. and international patents pending.

## **Industry Experience**

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Instructor for corporate training programs <i>Data Wise Academy</i>	2019
Contributor to the <u>Neuromarketing Yearbook 2018</u> <i>Neuromarketing Science &amp; Business Association</i>	2018
External consultant on behavioral nudging and analytics <i>Ecometricx</i>	2017
Project consultant on strategy and marketing <i>US-Brazil Connect &amp; National Confederation of Industry of Brazil</i>	2014

## **Select Graduate Mentees**

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Devyn Smith (dissertation committee member; University of Virginia, Ph.D. student in psychology)

## **Select Undergraduate Mentees**

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Pei-Ming (Vincent) Chen (National Taiwan Univ. '19; visiting student at UCB; currently Ph.D. student in marketing at UCB)  
Peter (Shichun) Wang (UC Berkeley '19; currently Ph.D. student in operations research and financial engineering at Princeton)  
Samira Maboudian (UC Berkeley '20; honors thesis mentee; currently Ph.D. student in neuroscience at UCB)  
Qianying Wu (Univ. of Sci. & Tech of China '20; visiting student at UCB; currently Ph.D. student in behavioral and social neuroscience at Caltech)

## **Professional Activities**

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### *Ad Hoc Reviewer - Journals*

Appetite; Cerebral Cortex; Cognitive, Affective, and Behavioral Neuroscience; Communications Biology; eNeuro; Frontiers in Neuroscience; Heliyon; Journal of Alzheimer's Disease; Journal of Behavioral Decision Making; Journal of Business Research; Journal of Interactive Marketing; Journal of Neuroscience; Journal of Neuroscience, Psychology, and Economics; Journal of the Association for Consumer Research; Molecular Psychiatry; NeuroImage; Neuropsychologia; PLoS Computational Biology; PLoS One; PNAS; Progress in Neurobiology; Psychonomic Bulletin and Review; Psychophysiology; Scientific Reports; Yale Journal of Biology and Medicine



### *Ad Hoc Reviewer - Conferences*

Association for Consumer Research (2022-present); Society for Consumer Psychology (2018-present); American Marketing Association Academic Conference (2022-present); Multidisciplinary Conference on Reinforcement Learning and Decision Making (2019, 2022); European Association for Consumer Research (2023-present)

### *Conference Planning*

The Association of Consumer Research Conference, 2023  
Chair, *Special Session "Process and Content and Memory-Based Choices: Cognitive and Computational Perspectives"*

The Association of Consumer Research Conference, 2022  
Co-Chair, *Special Session "Mapping Consumer Mental Processes and Representations Across Diverse Marketplaces"*

The Society for Neuroeconomics annual meeting, 2021  
Chair, *Symposium "The Diverse and Critical Roles of Memory Retrieval Processes in Decision Making"*

Multidisciplinary Conference on Reinforcement Learning and Decision Making, 2019  
Member, *Program Committee*

The Association of Consumer Research Conference, 2019  
Co-Chair, *Special Session "Extracting Behavioral Insights from Big Data: Novel AI and NLP Approaches"*

### *Grant Reviewer*

The U.S. National Science Foundation (2023)  
Scientific Research Network for Decision Neuroscience & Aging Pilot Grant (2019)

### *Professional Society Memberships*

Association for Consumer Research  
Economic Science Association  
Society for NeuroEconomics  
Society for Neuroscience  
Society for Consumer Psychology  
Cognitive Neuroscience Society  
New York Academy of Science  
American Association for the Advancement of Science  
National Postdoctoral Association

### **Services**

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*Darden School of Business, University of Virginia*

Member, Faculty Recruitment Committee (Marketing Area) 2022, 2023

*University of California, Berkeley*

Co-President, Berkeley Postdoctoral Association 2019-2020

Member, Advisory Committee for Postdoc Housing 2018

*Interdepartmental Neuroscience Program, Yale University*

Member & PhD Student Representative, Executive committee 2011-2016

Member, NeuroDay organizing committee 2014

Member, Graduate curriculum committee 2012

*Yale University*

Alumni Interviewer, Yale College Admissions Office 2019

Departmental representative, Graduate Student Assembly 2012-2013