Zhibin Zhou

Assistant Adjunct Professor
Department of Anesthesiology and Pain Medicine, UC Davis Health
Affiliated Faculty | Center for Neuroengineering & Medicine, UC Davis
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GitHub: https://github.com/zhibinz2
LinkedIn: https://www.linkedin.com/in/zhibin-zhou-b382349a/

Research Interests and skills

Research Interests:
Cognitive neurosciences, EEG methodologies in Cognitive functions, hyperscanning studies, source localization, Brain connectivity, Consciousness, Perception under Anaesthesia and Sleep, Pain and analgesia, Brain stimulation, Neurocritical care, Cerebral ischemia, Stroke, Motor function, cardiovascular and hemodynamic monitoring.
Research skills:
Neural/cardiovascular time series data analysis. Experience with signal processing in EEG research and the extraction of oscillatory features, graph-theoretic measures, signal complexity measures, and source localization.
Having worked on various projects with EEG, fNIRS, MRI, EMG, and tACS, I have programming experience in Matlab and Python, and am familiar with the Ubuntu Linux system, EEGLAB, Fieldtrip, MNE, Freesurfer, SPM, PsychoPy, Psychtoolbox, networkx, and hyperscanning settings with LSL.
With previous biomedical research background, I am familiar with molecular research techniques such as Immunohistochemistry, Western blot, qPCR, ELISA, human and animal behavioural tests in neuroscience, and conducting clinical trials.

Education

University of California, Irvine (UCI)
2025. Ph.D. of Cognitive Sciences — Department of Cognitive Sciences
2022. Master of Science in Cognitive Neuroscience — Department of Cognitive Sciences
Sun Yat-sen University (SYSU)
2014. Master of medicine (M.Med, Verified M.S. equivalent) — Department of Anesthesiology
Fujian Medical University (FMU)
2011. Bachelor of medicine (Verified U.S. M.D. equivalent) — School of Medical Technology and Engineering

Employment history

2025.10 – current	Affiliated Faculty	Center for Neuroengineering & Medicine, UC Davis
2025.08 – current	Assistant Adjunct Professor	Dept. of Anesthesiolog and Pain Medicine, UC Davis Health
2022.04 – 2015.07	Graduate Student Researcher	UCI
2022.03 - 2023.03	Research Fellow (Journeyman Fellow)	US DEVCOM Army Research Laboratory (ARL)
2019.09 - 2022.03	Graduate Teaching Assistant.	UCI
2017.12 - 2019.04	Teaching. Researcher. Attending	First Affiliated Hospital (FAH-SYSU)
2014.07 - 2017.11	Teaching. Researcher. Resident	FAH-SYSU
2011.07 - 2014.06	Graduate Student Researcher. Resident	SYSU
2010.05 - 2011.06	Internship Rotation	Affiliated hospitals FMU

Other affiliations

Editorial board member of International Journal of Anesthesia and Clinical Medicine (2023-current)
Editorial board member of Archives of Clinical Anesthesiology (2021-2024)
Expat field worker in MSF pool (Médecins Sans Frontières, Doctors without borders) (2019-2023)

History of participation in professional Societies:

SfN (Society for Neuroscience) 2022 2025-current
ASA (American Society of Anesthesiologists) 2015-2016 2025-current
CSA (California Society of Anesthesiologists) 2025-current
CMA (Chinese Medical Association) 2025
ANACP (Alliance of North American Chinese physicians) 2023
CASA (Chinese American Society of Anesthesiology) 2020
WFSA (World Federation of Societies of Anaesthesiologists) 2016

SAHK (The Societies of Anaesthesiologists of Hong Kong) 2016
WCA (World Congress of Anaesthesiologists) 2016
ICAA (International Chinese Academy of Anesthesiology) 2015
CSA (Chinese Society of Anesthesiology) 2013

Publications

Google Scholar Citation
https://scholar.google.com/citations?user=gQ3vtWkAAAAJ&hl=en

1. **Zhou ZB**, Wodeyar A, Steve C, Srinivasan R, Structural and EEG motor networks distinguish functional motor status post-stroke. Nature Neuroscience 2025 (In preparation)
2. **Zhou ZB**, Garcia JO., Srinivasan R, Complexity matching: adaptive strong anticipation enhances motor coordination. Network Neuroscience 2025 (In preparation)
3. Story B, **Zhou ZB**, Srinivasan R, Franaszczuk P, Methodology for applying mapper to EEG data. journal of neuroscience Methos 2025 (In preparation)
4. Delcamp C, Zhou ZB, Srinivasan R, Cramer S., Mapping brain function after stroke: from acute disorganization to chronic compensation, Brian 2025 (In preparation)
5. Delcamp C, Zhou ZB, Srinivasan R, Cramer S., Mapping post-stroke neuroplasticity: cortical activation and connectivity in relation to time and motor deficits. Neuroscience 2025
6. **Zhou ZB**, Wodeyar A, Cramer S, Srinivasan R. Structural and EEG motor networks distinguish level of motor impairment after stroke. MedRxiv https://doi.org/10.1101/2025.10.08.25337630
7. Story B, **Zhou ZB**, Srinivasan R, Franaszczuk P, MapperEEG: A topological approach to brain state clustering in eeg recordings. arXiv preprint arXiv:2504.10252, 2025 https://arxiv.org/abs/2504.10252
8. Story D, **Zhou ZB**, Srinivasan R, Franaszczuk P. Mapp(er)ing brain states using EEG data. Spring Topology and Dynamics Conference 2025 Abstract: https://preview.scholarlattice.org/submissions/e559133d-bfa5-40ba-b8fb-6bc74a6227ed
9. Pinto I, **Zhou ZB**, Srinivasan R, Symbolic dynamics of joint brain states during dyadic coordination. Chaos 35, 013110 (2025). DOI: 10.1063/5.0234902
10. Pinto I, **Zhou ZB**, Srinivasan R, Symbolic dynamics of brain networks during hyperscanning to investigate coordination of behaviour. Brain Informatics 2024: https://link.springer.com/conference/brain
11. **Zhou ZB**, Srinivasan R, Garcia JO. Human brain correlates of strong anticipation in motor coordination between dyads. Program No. 720.10. 2022 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2022. Online.
12. **Zhou ZB**, Srinivasan R. Detecting the state of drowsiness induced by propofol by spatial filter and machine learning algorithm on EEG recording. bioRxiv doi: https://doi.org/10.1101/2021.07.12.452077
13. Pinto I, **Zhou ZB**, Garcia JO., Srinivasan R, Symbolic dynamics of joint brain states during dyadic coordination. Arxiv 2024: https://www.arxiv.org/abs/2408.13360v1
14. Story D, **Zhou ZB**, Srinivasan R, Garcia JO, Franaszczuk P. Topological approaches to understanding multi-human team EEG state. Computational Neuroscience Meeting (CNS) 2024 Abstract: https://cns2024.sched.com/event/1e7xh/p1
15. **Zhou ZB**, Meng L, Gelb AW, Lee R, Huang WQ. Cerebral ischemia during surgery: an overview: J Biomed Res. 2016 Mar;30(2):83-7. DOI: 10.7555/JBR.30.20150126
16. **Zhou ZB**, Chen X, Zhou X, Yang X, Lu D, Kang W, Feng X. Effects of intraoperative gelatin on blood viscosity and oxygenation balance. Journal of PeriAnesthesia Nursing 2019; 34(6), 1274-1281. DOI: 10.1016/j.jopan.2019.05.136
17. **Zhou ZB**, Yang XY, Yuan BL, Niu LJ, Zhou X, Huang WQ, Feng X, Zhou LH. Sevoflurane-induced down-regulation of hippocampal oxytocin and arginine vasopressin impairs juvenile social behavioral abilities. J Mol Neurosci. 2015; 56: 70-77. DOI: 10.1007/s12031-014-0468-3
18. **Zhou ZB**, Yang XY, Tang Y, Zhou X, Zhou LH, Feng X. Subclinical concentrations of sevoflurane reduce oxidative stress but do not prevent hippocampal apoptosis. Molecular medicine reports. 2016; 14: 721-727. DOI: 10.3892/mmr.2016.5336
19. **Zhou ZB**, Yang XY, Zhou X, Niu LJ, Xiao LC, Huang WQ, Feng X. Propofol-induced rhabdomyolysis: a case report. Int J Clin Pharmacol Ther. 2015; 53: 890-894. DOI: 10.5414/CP202341
20. **Zhou ZB**, Yang XY, Zhou X, Wen SH, Xiao Y, Feng X. Anesthetic manipulation in extreme airway stenosis: a case report. J Med Case Rep. 2014; 8: 292. PMID: 25186092
21. **Zhou ZB**, Shao XX, Yang XY, Zhang T, Xian DF, Huang CY, Yang L, Huang WQ. Influence of hydroxyethyl starch on renal function after orthotopic liver transplantation. Transplantation proceedings. 2015; 47: 1616-1619. DOI: 10.1016/j.jopan.2019.05.136

22. Yang XY, **Zhou ZB***, Yang L, Zhou X, Niu LJ, Feng X. Hemodynamic responses during induction: comparison of Marsh and Schnider pharmacokinetic models. Int J Clin Pharmacol Ther. 2015; 53: 32-40. DOI: 10.5414/CP202141
23. Liao XZ, **Zhou ZB***, Cheng Z, Yang XY, Zhou X, Li BF, Feng X. The prognostic risk factors of ECMO in patients with cardiogenic shock: a retrospective cohort analysis. The heart surgery forum. 2017; 20: E170-E177. DOI: 10.1532/hsf.1780
24. Yang L, Huang CY, **Zhou ZB**, Wen ZS, Zhang GR, Liu KX, Huang WQ. Risk factors for hypothermia in patients under general anesthesia: Is there a drawback of laminar airflow operating rooms? A prospective cohort study. Int J Surg. 2015; 21: 14-17. DOI: 10.1016/j.ijsu.2015.06.079
25. Chen XH, Zhou X, Yang XY, **Zhou ZB**, Lu DH, Tang Y, Ling ZM, Zhou LH, Feng X. Propofol Protects Against H2O2-Induced Oxidative Injury in Differentiated PC12 Cells via Inhibition of Ca(2+)-Dependent NADPH Oxidase. Cellular and molecular neurobiology. 2016; 36: 541-551. DOI: 10.1007/s10571-015-0235-1
26. Zhou X, Song FH, He W, Yang XY, **Zhou ZB**, Feng X, Zhou LH. Neonatal exposure to sevoflurane causes apoptosis and reduces nNOS protein expression in rat hippocampus. Molecular medicine reports. 2012; 6: 543-546. DOI: 10.3892/mmr.2012.976
27. Zhou X, Li WD, Yuan BL, Niu LJ, Yang XY, **Zhou ZB**, Chen XH, Feng X. Lithium treatment prevents apoptosis in neonatal rat hippocampus resulting from sevoflurane exposure. Neurochemical research. 2016; 41: 1993-2005. DOI: 10.1007/s11064-016-1909-x
28. Chen XH, Zhou X, Lu D, Yang XY, **Zhou ZB**, Chen X, Chen Y, He W, Feng X. Aberrantly expressed long noncoding RNAs are involved in sevoflurane-induced developing hippocampal neuronal apoptosis: a microarray related study. Metabolic brain disease. 2016; 31: 1031-1040. DOI: 10.1007/s11011-016-9838-6
29. Zhou X, Li YQ, He W, Yang XY, Song FH, **Zhou ZB**, Tang Y, Zhou LH, Feng X. Effects of sevoflurane and propofol on cultured bone-marrow mesenchymal stem cells of rats. Int J Clin Pharmacol Ther. 2013 Apr;51(4):332-7. DOI: 10.5414/CP201788
30. Yang XY, Zhou X, **Zhou ZB**, Xie J, Feng X. Effect of different concentration of sevoflurane on delirium of pediatric anesthetic emergence period after adenoidectomy. Lingnan Modern Clinics in Surgery 12 (04), 381-383 PMCID/DOI: N/A
31. Chen X, Zhou X, Yang L, Miao X, Lu DH, Yang XY, **Zhou ZB**, Kang WB, Chen KY, Zhou LH, Feng X. Neonatal exposure to low-dose (1.2%) sevoflurane increases rats' hippocampal neurogenesis and synaptic oxi in later life. Neurotox Res. 2018 Aug;34(2):188-197. DOI: 10.1007/s12640-018-9877-3
32. Zhou X, Li W, Chen X, Yang X, **Zhou ZB**, Lu D, Feng X. Dose-dependent effects of sevoflurane exposure during early lifetime on apoptosis in hippocampus and neurocognitive outcomes in Sprague-Dawley rats. Int J Physiol Pathophysiol Pharmacol. 2016; 8: 111-119. PMCID: PMC5078483
33. Zhou X, Xian D, Xia J, Tang Y, Li W, Chen X, **Zhou ZB,** Lu D, Feng X. MicroRNA-34c is regulated by p53 and is involved in sevoflurane-induced apoptosis in the developing rat brain potentially via the mitochondrial pathway. Molecular medicine reports. 2017; 15: 2204-2212. DOI: 10.3892/mmr.2017.6268
34. Zhou X, Lu D, Li WD, Chen XH, Yang XY, Chen X, **Zhou ZB**, Ye JH, Feng X. Sevoflurane affects oxidative stress and alters apoptosis status in children and cultured neural stem cells. Neurotox Res. 2018 May;33(4):790-800. DOI: 10.1007/s12640-017-9827-5
35. Kang W, D Lu, Yang X, **Zhou ZB**, Chen X, Zhou X, Feng X. Postoperative analgesic effects of various quadratus lumborum block approaches following cesarean section: a randomized controlled trial. Journal of Pain Research 2019: 12, 2305. DOI: 10.2147/JPR.S202772
36. Yang X, Kang W, Xiong W, Lu D, **Zhou ZB**, Chen X, Zhou X, Feng X. The effect of dexmedetomidine as adjuvant to ropivacaine 0.1% for femoral nerve block on strength of quadriceps muscle in patients undergoing total knee arthroplasty: a double-blinded randomized controlled trial. Journal of Pain Research 2019:12, 3355. DOI: 10.2147/JPR.S217283

Clinical Trials

NCT02711280: The Effect of Anesthetics on Oxidative Stress and Apoptosis Status in Children
NCT03333902: The Comparison of Nerve Blocks in Cesarean Delivery
NCT03658421: Dexmedetomidine as Adjuvant for FNB in TKA
NCT02631356: The Effect of Succinylated Gelatin on the Blood Viscosity and Oxygen Delivery
NCT01759160: Hemodynamic Responses During Induction: Comparison of Marsh and Schnider Pharmacokinetic Models (TCI)

Grant Supports

- U.S. Army DEVCOM Army Research Laboratory Cooperative Agreement (W911NF2420013)

- National Science Foundation, United States (2126976)
- B.Braun Research Fund for Anesthesiology, Germany (No. BBDF-2014-016)
- Guangzhou International Science and Technology Cooperation Project (2012J5100019, 20130501c)
- Guangzhou Science and Technology Research Grant (201804010492)
- Guangdong Medical Research Foundation (A2012179)
- Guangdong Science and Technology Planning Project (2011B050400024, 2013B051000045)
- National Natural Science Foundation of China (31140050, 31471030, 81571032, 81701047, 81870829)

Awards and Certificates

1. USMLE step 1 passed in 2024 (Could apply for 2113 registrant for CA license exemption in the interim).
2. MathWorks Deep Learning & Machine Learning Certification 2025
3. The Tarow and Minako Indow Fellowship for Research Excellence 2024
4. GCP for Clinical Trials with Investigational Drugs and Medical Devices (U.S. FDA focus). CITI program 2024
5. Clinical Research Coordinator (CRC) Foundations. CITI program 2024
6. Human Subject Research Biomedical Investigators. CITI program 2021
7. Research and HIPAA Privacy Protections. CITI program 2021
8. Associate Dean Fellowship. 2021 Fall. School of Social Sciences. University of California, Irvine
9. Guangdong TCI Case Report presentation, Champion. 2016
10. Certification of Credits awarded by Partners HealthCare System (ACCME): Clinical Electroencephalography for the Anesthesiologist Part 1 and 2 (Intraoperative Management; Background and Basic Signatures) (funded by Brigham and Women's Hospital and Massachusetts General Hospital). 2016
11. International Anesthesia Research Society, 2nd IARS Research Prize. 2013
12. The 6th National Academic Forum for Young Anesthesiologists, 2nd Prize. 2013
13. Medical Postgraduate Teaching Contest of Sun Yat-sen University. 3rd Prize. 2012

Professional exchange and lecturing Experience

1. 2024.04-2024.06 TA for course COGS 112P & LP (Perception Research & Lab, with Professor Virginia M. Richards), University of California, Irvine
2. 2024.01-2024.03 TA for course COGS 130A (Perception & Sensory Processes, with Professor Michael D'Zmura), University of California, Irvine
3. 2022.01-2022.03 TA for course PSYCH 122C (Clinical Psychology, with Dr. Jacklyn Lewis), University of California, Irvine
4. 2021.04-2021.06 TA for course PSYCH 120P (Personality Theory, with Dr. Jacklyn Lewis), University of California, Irvine
5. 2021.01-2021.03 TA for course PSYCH 122C (Clinical Psychology, with Dr. Jacklyn Lewis), University of California, Irvine
6. 2020.09-2020.12 TA for course PSYCH 124V (Psychology of Violence, with Dr. Jacklyn Lewis), University of California, Irvine
7. 2020.03-2020.06 TA Discussion for PSYCH 9A (Psychology Fundamentals, with Professor Bruce G. Berg), University of California, Irvine
8. 2020.01-2020.03 TA Discussion for PSYCH 9A (Psychology Fundamentals, with Professor Michael D'Zmura), University of California, Irvine
9. 2019.09-2019.12 TA Discussion for Soc-Anth 10A (Probability and Statistics, with Professor Matt Huffman), University of California, Irvine
10. 2014.07-2019.03 Teaching Faculty of Anesthesiology at Sun Yat-sen University, Guangzhou, China
11. Have been serving as a professional English-Chinese translator and interpreter in various clinical and scientific seminars and international meetings since 2013. (A full list of details is available on request)
    - 08/18/2018 Interpretor in the first Conference of Anesthesiologists in Hong Kong Macau Guangdong Bay Area for lectures "The measurement of pain" by Hanaoka Kazuo, JR Tokyo General Hospital, University of Tokyo; "The systemic immune response to trauma" by Kwak Sanghyun, Chonnam National University, Korea; "Oral opioids for acute postoperative pain" by Stanley Wong, Queen Mary Hospital, Hong Kong; "CXCR4 induced Neuralgic pain and cardiac ischemia protection in multi-disciplinary study" by Zhengyuan Xia, University of Hong Kong.
    - 05/24/2017 Introduction of Sun Yat-sen University of Medical Science "Western Medicine Started Here" to Masimo Co (Jon Coleman, CA. USA. President Worldwide)'s visit to seek cooperation on EEG studies.
    - 09/09/2016 Interpretation for Patrick Purdon. Ph.D. (Massachusetts General Hospital. Harvard Medical School): Clinical Electroencephalography for Anesthesiologists: A window into Brain Function During Aging and Development.
    - 06/18/2016 Keynote Speaker "Blood loss, drug loss?" Anaesthesia Academic Carnival sponsored by AstraZeneca PLC

- 12/09/2015 and 05/17/2018 Interpreter for Dr Gelb, UCSF on the topic of EEG monitoring "Safer Anesthesia Management Real time Brain Function Monitoring" Xian and Guangzhou
- 10/26/2015 Presentation in the session of Experimental Neurosciences: Neurotoxicity and Neuroprotection. Subclinical Concentration of Sevoflurane Reduces Oxidative Stress But Does Not Prevent Hippocampal Apoptosis. ASA Annual meeting. San Diego. CA. USA.
- 09/13/2015 Interpretation for Dr. André Denault (Institut de Cardiologie de Montréal Centre Hospitalier de l'Université de Montréal, Québec, Canada): Brain and somatic oximetry pre, intra and post-operative applications. The opening ceremony of Medtronic INVOS
- 04/04/2015 Invited in a cooperation project to work with Prof. Mengling zhong, Yale. and Andria Gelb, UCSF on Cerebral Perfusion and Ischemia review

Languages

English, Chinese (Mandarin, Taiwanese/Hokkien, Cantonese)

Personal

Married. Two children.
Interest/Hobbies: Neuro/Biophysiological monitoring devices, Museums, Musicals, MIDI keyboard, Water sports - Paddle boarding/ Sailing / Snorkelling / Scuba diving (PADI Open water 1608AW2829) / Tidepool exploring / Bodyboard surfing, Biking (a proud member of BikeUCI Ambassadors).

Immigration status

H1B with EB-2 Green Card petition approved (Priority date 11/26/2021, Chinese Citizen)