

Xianghao Zhan

PhD Candidate | Siebel Scholar



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Education

Ph.D., Bioengineering | Stanford University | 19-24 | GPA:4.0
M.S., Statistics | Stanford University | 22-23 | GPA:4.0
M.S., Bioengineering | Stanford University | 19-21 | GPA:3.9
B.Eng. Automation, College of Control Science and Engineering | Zhejiang University | 15-19 | GPA:4.0/4.0, 93.29/100 | 1/131
B.Eng. Honors Degree | Chu Kochen Honors College | 15-19 | 1/151
B.A., English Language and Literature | School of International Study | Zhejiang University | 15-19

Skills

Programming: Python, MATLAB, R, C
Domains: Machine Learning, Linear Dynamical System, NLP, Deep Generative Models (VAE, GAN, Flow), Medical Informatics (image classification/segmentation, electronic health records, omics, sensor data, contrastive learning), Physiology, Stochastic Processes

Extra-Curricular

Research Mentor @ Foothill SLI | 22-23
Program Leader @ Stanford SSRP | 21
11 champions @ Stanford IMLeague Volleyball (8), Tennis (3) | 20-23
Captain & Champion @ Stanford IMLeague Volleyball | 20,21,22
Founder & Leader @ ZML Lab Science Propagation Platform | 19-
Founder @ Look A Head English Workshop | 20-
Captain @ Chu Kochen Honors College Volleyball Team | 16-18
Host @ AIESEC International Volunteer Project | 16
Leader @ Chu Kochen International and Translation Workshop | 15-19

Research Interests and Focus

Multimodal Biomedical Informatics: Imaging, Wearables, NLP, Omics

Computational and Animal Modeling of Traumatic Brain Injury

Journal Publications

- Nov'23 Journal, First Author Major Revision
AI-based denoising of head impact kinematics measurements with convolutional neural network for traumatic brain injury risk monitoring. IEEE TBME.
- Nov'23 Journal, First Author Minor Revision
Brain deformation estimation with transfer learning for small head impact datasets. IEEE TBME.
- Mar'23 Journal, First Author Published
Machine-learning-based head impact subtyping based on the spectral densities of the measurable head kinematics. JSHS.
- Jul'22 Journal, First Author Published
Piecewise Multivariate Linearity Between Kinematic Features and Cumulative Strain Damage Measure (CSDM) Across Different Types of Head Impacts. ABME.
- Jul'22 Journal, First Author Published
Reliably Filter Drug-induced Liver Injury Literature with Natural Language Processing and Conformal Prediction. IEEE J-BHI.
- Apr'21 Journal, First Author Published
Rapid Estimation of Entire Brain Strain Using Deep Learning Models. IEEE TBME.
- Apr'21 Journal, First Author Published
The relationship between brain injury criteria and brain strain across different types of head impacts can be different. Royal Interface.
- Mar'22 Journal, First Author Published
Find the spatial co-variation of brain deformation with principal component analysis. IEEE TBME.
- May'21 Journal, First Author Published
Predictive Factors of Kinematics in Traumatic Brain Injury from Head Impacts Based on Statistical Interpretation. ABME.
- May'21 Journal, First Author Published
Structuring clinical text with AI: old vs. new natural language processing techniques evaluated on eight common cardiovascular diseases. Patterns.
- Apr'21 Journal, Co-first Author Published
AI-based analysis of CT images for Rapid Triage of COVID-19 Patients. NPJ Dig. Med.
- May'22 Journal, Co-first Author Published
Unsupervised cross-user adaptation in taste sensation recognition based on surface electromyography. IEEE TIM.
- Jan'22 Journal, Co-first Author Published
CPSC: Conformal prediction with shrunken centroids for efficient prediction reliability quantification and data augmentation, a case in alternative herbal medicine classification with electronic nose. IEEE TIM.
- Feb'20 Journal, First Author Published
An electronic nose-based assistive diagnostic prototype for lung cancer detection with conformal prediction. Measurement.
- More Google Scholar: Xianghao Zhan
Cite: 394, h-index: 13, i10-index: 14

Conference Presentations

Jun'23	Toward Generalizable Brain Deformation Estimators For Head Impacts With Unsupervised Domain Adaptation And Deep Learning. Oral 2023 Summer Biomechanics, Bioengineering, and Biotransport Conference.
Mar'23	Filter Drug-induced Liver Injury (DILI) Literature with Natural Language Processing and Ensemble Learning. Oral AMIA Informatics Summit 2023; ISMB/ECCB 2021 Fellowship, ISCB Academy COSI Series; ISMB/ECCB 2021. Best Talk Award.
Jun/Nov'22	Denosing Instrumented Mouthguards For Accurate Traumatic Brain Injury Detection With Convolutional Neural Network. Oral ASME IMECE 2022: International Conference on Mechanical Engineering Congress and Exhibition; SB3C 2022: Summer Biomechanics, Bioengineering, and Biotransport.
Jun'22	A real-time system to monitor brain strain to detect dangerous head impacts. Poster Neurotrauma 2022.
Jun'22	A translational model for blood brain barrier disruption in concussion. Poster 2022 Gordon Research Conference: Barriers of CNS.
Oct/Nov'21	Rapidly Estimate Brain Strain and Strain Rate on Various Types of Head Impacts With Transfer Learning and Data Fusion on Deep Neural Network. ASME IMECE 2021; Forty-Nineth NHTSA Workshop on Human Subjects for Biomechanical Research.
Oct'21	A Deep Learning Head Model to Rapidly Estimate Traumatic Brain Injury Risks. Healthy lives category winner. Top 3 International Grand Finalists. Institute of Engineering and Technology. PresentIn10 2021 International Grand Final.
Jun'21	Prediction of brain strain across head impact subtypes using 18 brain injury criteria. SB3C2021: Summer Biomechanics, Bioengineering, and Biotransport.
Jun'21	Detection of Dangerous Head Impact in Sports. IRCOBI Asia Conference 2021.
Jun'20	Real-time visualization of brain strain using neural network. SB3C2020: Summer Biomechanics, Bioengineering, and Biotransport.
May'19	Fast T1, T2 Evaluation with Machine Learning for quantitative Cardiac MRI. International Society of Magnetic Resonance in Medicine (ISMRM) 2019

Mentors

Prof. David B. Camarillo dcamarillo@stanford.edu
Department of Bioengineering, Stanford University

Prof. Olivier Gevaert ogevaert@stanford.edu
Department of Biomedical Informatics, Stanford University

Prof. Michael Zeineh mzeineh@stanford.edu
Department of Radiology, Stanford University

Dr. ManKin Choy chom4@gene.com
Department of Translational Imaging, Genentech

Prof. Guang Li guangli@zju.edu.cn
Institute of Cyber-System and Control, Zhejiang University

Grant Proposals

May. 23	National Institute of Health. R01 A porcine impact model of mTBI: biomechanics, imaging, and pathology.	Co-author
Apr. 22	Wu Tsai Performance Alliance Agility Project Grant. Funded. 200k dollars, 2 years Blood-brain-barrier disruption and axonal injury in traumatic brain injury: linking neuroimaging and biomechanics with pathologies	Leading Author
Feb. 22	Stanford Precision Health and Integrated Diagnostics Center Seeding Grant. Funded. 200k dollars, 2 years Linking neuroimaging and biomechanics with traumatic brain injury pathologies caused by repetitive head impacts in a large animal model.	Leading Author
Dec. 21	Department of Defense Traumatic Brain Injury and Psychological Health Research Program Translational Research Award Toward prevention of blood-brain-barrier disruption and axonal trauma in combat blunt impact	Leading Author
Apr. 21	Chan Zuckerberg Biohub Investigator Awards Modeling the initiation of neurodegeneration from repetitive mild brain trauma	Co-author

Contribution to Diversity, Community and Society

Mar. 22/23	Research Mentor Instructed a talented Latino undergraduate from Foothill College on machine learning project on impact kinematics for three quarters.	Foothill SLI Winter Internship
Jul. 21	Program Leader Instructed three talented Latino and Vietnamese undergraduates on research, graduate application and scientific presentation. One of the student got the best presentation award. Mentees' honors: Amgen Fellowship at Stanford University School of Medicine, BBPS Scholar program at the Broad Institute of MIT and Harvard.	Stanford Summer Research Program
19-21	Founder and Manager Invited researchers from Universities and research institutes across the globe to write easy-to-understand and well-illustrated science communication articles. In a collaboration with Harvard Medical School's Tweeter account in 2020 and 2021, ZML and HMS accounts jointly propagates some of the successful and scientifically meaningful practice implemented in China (e.g., treatment protocols, sanitization and cleaning guidelines) and the hardship and devotion of the medical workers in China during the early pandemic, to fight against the defamation, conspiracy theories and rumors on the Chinese effort to deal with the pandemic and the hate and bias towards China at the beginning and middle stage of the COVID-19 pandemic. ZML Lab has been awarded 10000 RMB for the significant contribution to the science communication effort in 2019 and 2020.	ZML Lab Science Communication Wechat Platform
Mar. 20	Volunteer Presented brain physiology and comparison among different brains across species at Jane Leland Stanford High School.	Stanford Brain Day

Awards & Honors

Sept'23	Siebel Scholar Class of 2024 Siebel Scholar recognizes the most talented students at the world's most prestigious bioengineering, business and computer science schools.
Feb'23	AMIA IS23 LEAD Trainee and Early Career Meeting Scholarship Six awardees each year in the US.
Oct'22	2022 IET Postgraduate Scholarship for an Outstanding Researcher 1 awardee each year across the globe. The highest level of IET Postgraduate Scholarship. The first Chinese researcher to be awarded.
Sept'22	2022 IET Healthcare Technologies William James Award 1 awardee each year across the globe.

Jul'22	2021 Chinese Government Award for Outstanding Self-financed Students Abroad The highest governmental award to Chinese graduate students studying abroad.
Jun'22	2022 National Neurotrauma Society Trainee Travel Award 20 awardees. The only Chinese researcher awarded 2022.
May'22	2022 Stanford Interdisciplinary Graduate Fellowship 34 awardees in 2022. One of the greatest honors for Stanford doctoral student pursuing interdisciplinary research. Cover tuition and stipend for 2 years.
Nov'21	CS236 Deep Generative Models Best Interdisciplinary Award 1 awardee
Oct'21	Category Winner of IET Presentin10 Top 3. The first Chinese in the International Grand Final and the only contestant outside UK in the international final.
Sep'20	The James Clark Graduate Fellowship, Stanford University
Dec'17	Ten Most Preeminent Students, Zhejiang University 10/36,000. The only junior undergraduate awarded in 2017 & Summa Cum Laude in Zhejiang University
Dec'18	Chu Kochen Scholarship, Zhejiang University 12/23,000. The highest-level scholarship in Zhejiang University
Dec'16	Chinese National Scholarship, Ministry of Education of PRC Top 0.2%
Jan'19	First-level Fellowship of CICS Top 12 national awardees. Chinese Instrument and Control Society Scholarship
Feb'19	Cambridge Trust International Scholarship Top 80 international awardees
Dec'19	2019 IET Cyber-systems and Robotics Research Article Contest. Second Prize. Top 5 International Awardees.
Jul'19	Excellent Graduate of Zhejiang Province, China Top 2%
Jun'19	Winner of IET Present Around The World National Final No. 1 in PRC. Represented China to Participate in Asian Pacific Final

Teaching

Spring 22	BIOE103 Instructor: Karl Deisseroth, Michael Fischbach. Student Feedback (33/42): 1) How much did you learn from this instructor? A great deal (40%), A lot (60%); 2) Overall, how effective was the instruction you received from this instructor? Extremely effective (100%); 3) What skills or knowledge did you learn or improve from this instructor? "Coding with python", "Computational approaches for Psets"; 4) What aspects of this instructor's teaching were most helpful to you? "He was great at problem solving bugs in the Psets", "Funny, careing, patient".	System Physiology TA
Spring 21	BIOE301P Instructor: Paul Nuyujukian. I was one of the 3 TAs for BIOE301P, instructed by Prof. Paul Nuyujukian. Student Feedback (21/32): 1) How much did you learn from this instructor? A great deal (67%), A lot (17%), A moderate amount (17%); 2) Overall, how effective was the instruction you received from this instructor? Extremely effective (67%), Very effective (17%), Moderately effective (17%); 3) What skills or knowledge did you learn or improve from this instructor? "Helping me debug", "Python and data processing"; 4) What aspects of this instructor's teaching were most helpful to you? "Great organization, thank you!", "Patience knowledge positivity".	Research Data and Computation TA

Professional Affiliation

20-23	Institute of Engineering and Technology	Member
22-23	American Society of Neurotrauma	Student Member
22-23	IEEE Engineering in Medicine and Biology Society	Member
23-	American Medical Informatics Association	Student Member
21-22	International Society of Computational Biology	Student Member

Media Coverage

Sept. 23	2024 Siebel Scholars https://www.businesswire.com/news/home/20230919861208/en/Siebel-Scholars-Foundation-Announces-Class-of-2024	Awardee Information
Oct. 22	2022 Postgraduate scholarship winners https://www.theiet.org/impact-society/awards-scholarships/iet-postgraduate-research-awards/2022-winners/	Awardee Information
Mar. 22	ISCB Academy - COSI Series. https://www.youtube.com/watch?v=FzEo93CHRtI	Public Lecture
Dec. 21	Engineering Stories Episode 6: Xianghao Zhan-Stanford University Podcast Apple Podcasts - https://zcu.io/hr05 ; Spotify - https://zcu.io/Hrew ; RSS Feed - https://zcu.io/rFCC	
Apr. 19	Preeminent Student Propagation of Chu Kochen Honors College, Zhejiang University https://youtu.be/wtCj4tpX7cE	Video in Chinese