

Qingyu Zhao | CV

Personal Information

Chinese citizen, Married
Date of Birth: Oct 30, 1989
Office: BN 153, SRI International
Address: 333 Ravenswood Ave, Menlo Park, CA 94025
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Education

Ph.D. <i>University of North Carolina at Chapel Hill, Computer Science</i>	NC, USA 2012–2017
Bachelor of Science <i>Shanghai Jiao Tong University, Computer Science</i>	Shanghai, China 2008–2012

Research Interests

Medical Image Analysis, Neuroimaging, Machine Learning, Statistics, Computer Vision, Visualization

Research Experience

Research Scientist <i>Stanford University</i>	CA, USA 2020-
Investigator <i>NCANDA</i>	2019-
● NIH AA021697-04S1: Data Analysis Resource of the National Consortium on Alcohol and Neurodevelopment in Adolescence (NCANDA)	
Research Consultant <i>SRI International, Center for Health Sciences</i>	2017-
Postdoctoral Research Fellow <i>Stanford University</i>	CA, USA 2017-2019
● MR brain image analysis and machine learning.	
● Statistical analysis on neuroimaging data.	
Long-term Visitor <i>Kitware Co.</i>	NC, USA 2017 Summer
● Implemented my proposed surface registration algorithm as an ITK external module	

Research Assistant **NC, USA**
UNC Chapel Hill, Medical Image Display & Analysis Group *2012–2017*

- 2D/3D image registration method for Image-Guided Radiation Therapy.
- Surface reconstruction from endoscopic videos.
- CT/endoscope surface registration for pharyngeal radiation treatment planing.
- Mechanical modeling for tissue elasticity estimation.

Research Assistant **Shanghai, China**
Shanghai Jiao Tong University, Image, Video & Multimedia Laboratory *2010–2012*

- Pulmonary nodule segmentation in CT scans.

Research Assistant **Shanghai, China**
Shanghai Jiao Tong University, Robot and Autonomous System Group *2010–2012*

- Vision sharing in robotics

Other Experience

Research Advisor **CA, USA**
The Computational NeuroScience Lab, Stanford *2019–*

- Mentored **10+** PhD and master students from CS, EE, BME and other departments (including visiting scholars from other institutions) in independent research projects on machine learning and neuroimaging.

Course Project Mentor **CA, USA**
Stanford, Computer Science Department *2018–*

- 2020 CS-231N Convolutional Neural Networks for Visual Recognition: Visualizing CNNs for Interpretable Alzheimer's Diagnosis Through Neuroimaging
- 2019 CS-230 Deep Learning: Prediction of Biological Age and Sex by Comparison and Synergy between Spatial Temporal Graph CNN on functional MRI data and CNN on structural MRI
- 2019 CS-229 Machine Learning: Gender Classification of Diffusion-Weighted Brain Images via Convolutional Neural Network
- 2018 CS-230 Deep Learning: Deep Learning for Classifying Heavy Drinkers from Normal Controls
- 2018 CS-229 Machine Learning: Classifying Adolescent Excessive Alcohol Drinkers from fMRI Data

Visualization Intern **NC, USA**
N.C. Cancer Hospital, Radiation Oncology *2015–2016 Summer*

- 3D visualization for quality assurance in radiation treatment planning

Teaching Assistant **NC, USA**
UNC COMP 550, Algorithm Analysis *2012 Fall*

Software Intern **Shanghai, China**
Intel Co., Visual Parallel Computing Group *2011–2012*

- Latency profiling and testing of Intel graphics processor DXVA DDIs.

Chief Engineer **Shanghai, China**
Shanghai Jiao Tong University, Google Android Laboratory *2010–2012*

- Developed an Android-based human interface and game controller device.

Journals

- [Q. Zhao*](#), [Z. Liu*](#), [E. Adeli](#), [K.M. Pohl](#), Longitudinal Self-supervised Learning, *Medical Image Analysis, In Press, 2021*
- [E.V. Sullivan](#), [Q. Zhao](#), [K.M. Pohl](#), [N.M. Zahr](#), [A. Pfefferbaum](#), Attenuated Cerebral Blood Flow in Frontolimbic and Insular Cortices in Alcohol Use Disorder: Relation to Working Memory, *Journal of Psychiatric Research, In Press, 2021*
- [Q. Zhao](#), [E.V. Sullivan](#), [N. Honnorat](#), [E. Adeli](#), [S. Podhajsky](#), [M.D. De Bellis](#), [K.B. Nooner](#), [F.C. Baker](#), [I.M. Colrain](#), [S.F. Tapert](#), [S.A. Brown](#), [W.K. Thompson](#), [B.J. Nagel](#), [D.B. Clark](#), [A. Pfefferbaum](#), [K.M. Pohl](#), Association of Heavy Drinking With Deviant Fiber Tract Development in Frontal Brain Systems in Adolescents, *JAMA Psychiatry, 78 (4), pp 407-415, 2020*
- [Q. Zhao](#), [E. Adeli](#), [K.M. Pohl](#), Training Confounder-Free Deep Learning Models for Medical Applications, *Nature Communications, 11 (6010), pp 1-9, 2020*
- [J. Ouyang](#), [Q. Zhao](#), [E.V. Sullivan](#), [A. Pfefferbaum](#), [S.F. Tapert](#), [E. Adeli](#), and [K.M. Pohl](#), Longitudinal Pooling and Consistency Regularization to Model Disease Progression from MRIs, *IEEE Journal of Biomedical And Health Informatics (JBHI), In Press, 2020*
- [Q. Zhao](#), [K.M. Pohl](#), [E.V. Sullivan](#), [A. Pfefferbaum](#), [N.M. Zahr](#), Jacobian mapping reveals converging substrates of disruption and repair in response to ethanol exposure and abstinence in two strains of rats, *Alcoholism: Clinical and Experimental Research, Vol 45, No. 1, pp 92-104, 2020*
- [M. Fritz](#), [A.M. Klawonn](#), [Q. Zhao](#), [E.V. Sullivan](#), [N. Zahr](#), [A. Pfefferbaum](#), Structural and biochemical imaging reveals systemic LPS-induced changes in the rat brain. *Journal of Neuroimmunology, Vol 348, pp 1-10, 2020*
- [Q. Zhao*](#), [E. Adeli*](#), [N.M. Zahr](#), [A. Goldstone](#), [Pfefferbaum](#), [E.V. Sullivan](#), [K.M. Pohl](#), Deep Learning Identifies Morphological Determinants of Sex Differences in the Pre-Adolescent Brain. *NeuroImage, Vol 223, pp 1-13, 2020*
- [Q. Zhao](#), [E.V. Sullivan](#), [E. Muller-Oehring](#), [N. Honnorat](#), [E. Adeli](#), [S. Podhajsky](#), [F.C. Baker](#), [I.M. Colrain](#), [D. Prouty](#), [S.F. Tapert](#), [S.A. Brown](#), [M.J. Meloy](#), [T. Brumback](#), [B.J. Nagel](#), [A.M. Morales](#), [D.B. Clark](#), [B. Luna](#), [M.D. De Bellis](#), [J.T. Voyvodic](#), [A. Pfefferbaum](#), [K.M. Pohl](#), Adolescent Alcohol Use Disrupts Functional Neurodevelopment in Sensation Seeking Girls. *Addiction Biology, In Press, 2020*
- [Q. Zhao](#), [A. Pfefferbaum](#), [S. Podhajsky](#), [K.M. Pohl](#), [E.V. Sullivan](#), Accelerated Aging and Motor Control Deficits Are Related to Regional Deformation of Central Cerebellar White Matter in Alcohol Use Disorder. *Addiction Biology, 2019, 25(3) pp 1-12*
- [Q. Zhao](#), [D. Kwon](#), [E.M. Muller-Oehring](#), [Anne-Pascale Le Berre](#), [A. Pfefferbaum](#), [E.V. Sullivan](#), and [K.M. Pohl](#), Longitudinally Consistent Estimates of Intrinsic Functional Networks. *Human Brain Mapping, 2019, 40(8), pp 2511-2528*
- [T. Leng](#), [Q. Zhao](#), [X. Qin](#), On discrete Wirtinger-Northcott problems. *Linear Algebra and its Applications, Vol 575, pp 141-158, 2019*
- [R. Ma](#), [Q. Zhao](#), [R. Wang](#), [J. Damon](#), [J. Rosenman](#), [S. Pizer](#), Deforming generalized cylinders without self-intersection by means of a parametric center curve. *Computational Visual Media, 2018: doi:10.1007/s41095-018-0127-7*
- [Q. Zhao](#), [M. Fritz](#), [A. Pfefferbaum](#), [E.V. Sullivan](#), [K.M. Pohl](#), [N.M. Zahr](#), Jacobian maps reveal under-reported brain regions sensitive to extreme binge ethanol intoxication in the rat. *Frontiers in Neuroanatomy, 2018, doi: 10.3389/fnana.2018.00108, Vol 4, pp 305-321*
- [E. Adeli](#), [D. Kwon](#), [Q. Zhao](#), [A. Pfefferbaum](#), [N.M. Zahr](#), [E.V. Sullivan](#), [K.M. Pohl](#), Chained

* Equal contribution

regularization for identifying brain patterns specific to HIV infection. *Neuroimage*, Vol 183, pp 425-437, 2018

- S.H. Park, Y. Zhang, D. Kwon, Q. Zhao, N.M. Zahr, A. Pfefferbaum, E.V. Sullivan K.M. Pohl. Alcohol use effects on adolescent brain development revealed by simultaneously removing confounding factors, identifying morphometric patterns, and classifying individuals. *Nature Scientific Reports* 8(8297), 2018
- S.K. McGill, J. Rosenman, Q. Zhao, R. Wang, R. Ma, M. Fan, M. Niethammer, R. Alterovitz, J. Frahm, J. Tepper, S. Pizer. Missed Colonic Surface Area at Colonoscopy Can Be Calculated with Computerized 3D Reconstruction. *Gastrointestinal Endoscopy* 87 (6), 2018
- J. Rosenman, Q. Zhao, T. Price, R. Wang, J Hong, M Niethammer, R Alterovitz, J.M. Frahm, B. Chera B, S. Pizer. Registration of Nasopharynoscope Videos with Radiation Treatment Planning CT Scans. *Canc. Therapy & Oncol. Int. J.* 2017; 5(1): 555652. doi: 10.19080/CTOIJ.2017.05.555652.
- Q. Zhao, C. Chou, G. Mageras, and S. Pizer, Local Metric Learning in 2D/3D Deformable Registration With Application in the Abdomen, *IEEE Transactions on Medical Imaging* 2014, 33(8), pp 1592-600

Peer-reviewed Conferences

- J. Ouyang, Q. Zhao, E. Adeli, A. Pfefferbaum, E.V. Sullivan, G. Zaharchuk, K. Pohl, Self-Supervised Longitudinal Neighbourhood Embedding, *MICCAI 2021*
- M. Lu, Q. Zhao, J. Zhang, K.M. Pohl, L. Fei-Fei, J.C. Niebles, E. Adeli, Metadata Normalization, *CVPR 2021*
- Z. Liu, E. Adeli, K.M. Pohl, Q. Zhao, Going Beyond Saliency Maps: Training Deep Models to Interpret Deep Models, *Information Processing in Medical Imaging (IPMI) 2021 (oral presentation, acceptance rate 10%)*
- J. Ouyang, E. Adeli, K.M. Pohl, Q. Zhao, G. Zaharchuk, Representation Disentanglement for Multi-modal MR Analysis, *Information Processing in Medical Imaging (IPMI) 2021 (oral presentation, acceptance rate 10%)*
- Q. Zhao*, E. Adeli*, A. Pfefferbaum, E. V. Sullivan, L. Fei-Fei, J. C. Niebles, K. M. Pohl, Representation Learning with Statistical Independence to Mitigate Bias, <https://arxiv.org/abs/1910.03676>, *WACV 2021*
- R. Ayub, Q. Zhao, M.J. Meloy, A. Pfefferbaum, E.V. Sullivan. Adeli, K. M. Pohl, Inpainting Cropped Diffusion MRI using Deep Generative Models, *3rd Workshop on PRedictive Intelligence in MEdicine (PRIME), 2020*
- Q. Zhao*, S. Gadgil*, A. Pfefferbaum, E. V. Sullivan, E. Adeli, K. M. Pohl, Spatio-Temporal Graph Convolution for Functional MRI Analysis, *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2020*
- T. Leng, Q. Zhao, C. Yang, Z. Lu, E. Adeli, K. M. Pohl, Data Augmentation based on Substituting Regional MRI Volume Scores, *Workshop on Large Scale Annotation of Biomedical Data and Expert Label Synthesis, 2019 (oral presentation)*
- N. Honnorat, E. Adeli, Q. Zhao, Adolf Pfefferbaum, Edith V. Sullivan, K.M. Pohl, Covariance Shrinkage for Dynamic Functional Connectivity, *International Workshop on Connectomics in NeuroImaging (CNI), 2019 (oral presentation)*
- Q. Zhao*, E. Adeli*, Adolf Pfefferbaum, Edith V. Sullivan, K.M. Pohl, Confounder-Aware Visualization of ConvNets, *Workshop on Machine Learning in Medical Imaging (MLMI), 2019 (oral presentation)*

- Q. Zhao, E. Adeli, N. Honnorat, Tuo Leng, K.M. Pohl, Variational AutoEncoder For Regression: Application to Brain Aging Analysis, *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2019
- Q. Zhao, N. Honnorat, E. Adeli, A. Pfefferbaum, E. Sullivan, K.M. Pohl, Variational Autoencoder with Truncated Mixture of Gaussians for Functional Connectivity Analysis, *Information Processing in Medical Imaging (IPMI) 2019*
- J. Zhuang, N.C. Dvornek, Q. Zhao, X. Li, P. Ventola, J.S. Duncan. Prediction of treatment outcome for autism from structure of the brain based on sure independence screening. *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2019
- R. Ma, Q. Zhao, R. Wang, J. Damon, J. Rosenman, S. Pizer. Skeleton-based Generalized Cylinder Deformation under the Relative Curvature Condition. *Pacific Graphics*, 2018
- Q. Zhao, D. Kwon, K.M. Pohl. A Riemannian Framework for Longitudinal Analysis of Resting-State Functional Connectivity. *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2018
- Q. Zhao, S. Pizer, M. Niethammer, R. Alterovitz, J. Rosenman, Orthotropic Thin Shell Elasticity Estimation for Surface Registration, *Information Processing in Medical Imaging 2017 (IPMI)* (**oral presentation, acceptance rate 15%**)
- R. Wang, T. Price, Q. Zhao, J.M. Frahm, J. Rosenman, S. Pizer, Improving 3D surface reconstruction from endoscopic video via fusion and refined reflectance modeling, *SPIE Medical Imaging 2017*
- Q. Zhao, T. Price, S. Pizer, M. Niethammer, R. Alterovitz, J. Rosenman, The Endoscopogram: a 3D Model Reconstructed from Endoscopic Video Frames, *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2016 (**oral presentation, acceptance rate 5%**)
- Q. Zhao, T. Price, S. Pizer, M. Niethammer, R. Alterovitz, J. Rosenman, Surface Registration in the Presence of Missing Patches and Topology Change, *Medical Image Understanding and Analysis (MIUA) 2015*, pp 1-6, **oral presentation, Best paper award**
- Q. Zhao, S. Pizer, M. Niethammer, J. Rosenman, Geometric-Feature-Based Spectral Graph Matching in Pharyngeal Surface Registration, *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2014
- H. Zhao, Q. Zhao, X. Zhu, Z. Li, Vision sharing for collaboratively teleoperated mobile manipulators, *WCICA 2011*, pp 575-580

Abstracts, Preprints, and Others

- Q. Zhao, E.V. Sullivan, N. Honnorat, E. Adeli, S. Podhajsky, M.D. De Bellis, K.B. Nooner, F.C. Baker, I.M. Colrain, S.F. Tapert, S.A. Brown, W.K. Thompson, B.J. Nagel, D.B. Clark, A. Pfefferbaum, K.M. Pohl, Young Teens Who Initiate Heavy Drinking Risk Deviant Fiber Tract Development in Frontal Brain Systems, 44th Annual RSA Scientific Meeting / ISBRA Congress, 2021 **oral presentation**
- K.M. Pohl, Q. Zhao, E. Adeli, Advancing Neuroscientific Discovery via Bias-Resilient Neural Networks, *the 54th Asilomar Conference on Signals, Systems and Computers*, 2020
- A. Pfefferbaum, N.M. Zahr, Q. Zhao, K.M. Pohl, E.V. Sullivan, Translational Studies of Alcohol Use Disorder, *7th International Drug Abuse Research Society Meeting (IDARS)*, 2019
- S.M. Pizer, J. Frahm, J.G. Rosenman, Q. Zhao, R. Wang, R. Ma, J.T. Price, M. Fan, S.K. McGill, Methods, systems, and computer readable media for deriving a three-dimensional (3D)

textured surface from endoscopic video, *United States Patent Application No. 16/241,356, UNC Ref. 18-0149 2020*

- R. Wang, Q. Zhao, T. Price, R. Ma, A. Aji, J. Frahm, J. G. Rosenman, S. Pizer, Endoscopography: Deriving a 3D Textured Surface from Endoscopic Video, Then Registration with CT, *Preprint available at <https://www.semanticscholar.org>, 2019*
- Q. Zhao, N. Honnonrat, E. Adeli, K.M. Pohl, Truncated Gaussian-Mixture Variational AutoEncoder, *Preprint, arXiv:1902.03717, 2019*
- S.K. McGill, J. Rosenman, Q. Zhao, R. Wang, R. Ma, M. Fan, M. Niethammer, R. Alterovitz, J.M. Frahm, J. Tepper, S.m. Pizer, Missed Colonic Surface Area at Colonoscopy Can Be Calculated with Computerized 3D Reconstruction. Digestive Diseases Week (poster), 2018
- Q. Zhao, Surface Registration for Pharyngeal Radiation Treatment Planning, *University of North Carolina at Chapel Hill, Computer Science, PhD Thesis 2017*
- T. Price, Q. Zhao, J. Rosenman, S. Pizer, J.M. Frahm, Shape from motion and shading in uncontrolled environments, *Technical Report UNC Computer Science, 2016*
- B. Sheng, Q. Zhao, L. Ma, GPU (Graphic Processing Unit) accelerating encoder rate control method, *Patent CN102724507B, 2014*

Invited Talks and Presentations

- Interpretable Deep Learning for Neuroimaging Studies. (Talk) Meetup at AI in Medical Imaging, *RSIP Vision, Cupertino, 2020*
- Variational Autoencoders for Clustering, Classification, and Regression with Applications to Neuroimaging. (Talk) *Department of Computer Science, Stanford, 2019*
- Variational Autoencoder with Truncated Mixture of Gaussians for Functional Connectivity Analysis. (Poster) Big Data in Precision Health conference, *Stanford, 2019*
- Variational Autoencoders for Clustering, Classification, and Regression with Applications to Neuroimaging. (Talks) 2019
 - Peking University, *Beijing*
 - Shanghai JiaoTong University, *Shanghai*
 - Shanghai University, *Shanghai*
- Novel longitudinal analysis of resting-state functional connectivity on the NCANDA cohort. (Talk & Poster) NADIA/NCANDA Joint Meeting at NIH, *Maryland, 2019*
- Longitudinal analysis on resting-state functional connectivity. (Poster) Natural/Artificial Intelligence Symposium of the Stanford Neuroscience Institute, *Stanford, 2018*
- Orthotropic Thin Shell Elasticity Estimation for Surface Registration. (Talk) International Shape Stats Group, *UNC Chapel Hill, 2017*
- 3D Reconstruction from Endoscope and CT Data. (Poster) 2nd Mid-Atlantic Computer Vision Workshop, *UNC Chapel Hill, 2015*

Selected Honors

MICCAI 2016 Student Travel Awards	2016
Medical Image Understanding and Analysis Conference Best Paper Award	2015
Best Project Award of the 4th Chinese University Students Creativity Forum	2011
First prize in the 7th Software Exposition, School of Software, SJTU	2011
Academic excellence scholarship (Third-class) of SJTU	2009,2010

First prize of National Olympiad in Informatics in Provinces
Bronze medal of National Olympiad in Informatics

2006,2007
2007

Professional Service

Journal Review

- IEEE Transactions on Medical Imaging (TMI)
- IEEE Transactions on Biomedical Engineering (TBME)
- IEEE Journal of Biomedical and Health Informatics (JBHI)
- Neuroimage
- Medical Image Analysis (MEDIA)
- Alcoholism: Clinical and Experimental Research (ACER)
- Scientific Reports
- Physics in Medicine and Biology
- Psychiatry Research: Neuroimaging (PSYN)
- Frontiers in Neuroscience
- Computer Vision and Image Understanding (CVIU)
- American Research Journal of Radiology and Nuclear Medicine
- International Journal of Automation and Computing (IJAC)
- International Journal of Computer Assisted Radiology and Surgery (IJCARS)
- PLOS ONE

Conference Review

- Neural Information Processing Systems (NeurIPS)
- The International Conference on Learning Representations (ICLR)
- International Conference on Computer Vision (ICCV)
- Conference on Computer Vision and Pattern Recognition (CVPR)
- AAAI Conference on Artificial Intelligence
- Winter Conference on Applications of Computer Vision (WACV)
- Information Processing in Medical Imaging (IPMI)
- Medical Image Computing and Computer Assisted Intervention (MICCAI)
- The IEEE International Symposium on Biomedical Imaging (ISBI)
- Machine Learning in Medical Imaging (MLMI)
- Workshop on Predictive Intelligence in Medicine (PRIME)
- Medical Imaging with Deep Learning (MIDL)

Other

- Workshop on Machine Learning in Medical Imaging (MLMI), *Program Committee Member*
- Workshop on Machine Learning in Medical Imaging (MLMI), *Session Chair*
- Workshop on Predictive Intelligence in Medicine (PRIME), *Program Committee Member*
- Information Processing in Medical Imaging (IPMI) *Reading Group Chair*