SIYI TANG

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EDUCATION

Stanford University

Ph.D. in Electrical Engineering — Sep 2018 – Present
M.S. in Electrical Engineering — Sep 2018 – Dec 2021

National University of Singapore

B.Eng. in Electrical Engineering (Highest Distinction Honors) — Aug 2012 – Jun 2016

ACADEMIC WORK EXPERIENCE

Research Assistant, Department of Biomedical Data Science, Stanford University — Apr 2019 – Present

- Developing dynamic graph neural networks to model multivariate time series
- Developed multimodal spatiotemporal graph neural networks for 30-day hospital readmission prediction
- Developed multimodal models for fusion of electrocardiograms and intracardiac electrograms for patient outcome prediction
- Developed graph neural networks and self-supervised pre-training methods for seizure detection and multiclass seizure classification from EEG signals
- Leveraged data valuation techniques to quantify value in large medical imaging datasets

Research Intern, Salesforce Research, USA — Jun 2021 – Sep 2021

- Developed a deep-learning-based prostate cancer grading system with significantly improved prognostic value than the existing Gleason grading system

Research Assistant, Center for Biomedical Informatics Research, Stanford University — Jan 2019 – Apr 2019

- Developed computer vision algorithms for brain cancer survival prediction from 3D MRI data with a proportional hazards regression model

Research Assistant, Clinical Imaging Research Center, Singapore — Mar 2017 – Aug 2018

- Developed a Bayesian model to discover subtypes of autism spectrum disorder from large-scale brain imaging data
- Investigated associations between the identified subtypes and behavioral symptoms using multivariate statistical analyses

Research Assistant, National University of Singapore — Aug 2015 – Feb 2017

- Developed a computer vision algorithm to detect orientation and grasp-type of household objects in real-time with an event-based vision sensor
- Implemented the orientation and grasp-type detection algorithm on a prosthetic hand for real-time grasping of household objects
- Integrated tactile sensors into the prosthetic hand to improve grasp accuracy

PUBLICATIONS

- **S. Tang**, O. Razeghi, R. Kapoor, M.I. Alhusseini , M. Fazal, A.J. Rogers, M. Rodrigo Bort, P. Wang, D.L. Rubin, S. Narayan, T. Baykaner, Machine Learning-Enabled Multimodal Fusion of Intra-Atrial and Body Surface Signals in Prediction of Atrial Fibrillation Ablation Outcomes, *Circulation: Arrhythmia and Electrophysiology*, 15(8), e010850, 2022
- **S. Tang***, A. Tariq*, J. Dunnmon, U. Sharma, P. Elugunti, D.L. Rubin, B.N. Patel, I. Banerjee, Multimodal Spatiotemporal Graph Neural Networks for Improved Prediction of 30-Day All-Cause Hospital Readmission, *arXiv*, 2022, https://arxiv.org/abs/2204.06766
- **S. Tang**, J.A. Dunnmon, X. Zhang, Q. Huang, K. Saab, D.L. Rubin, C. Lee-Messer, Self-Supervised Graph Neural Networks for Improved Electroencephalographic Seizure Analysis, *International Conference on Learning Representations*, *2022,* Apr 2022

- A. Tariq, **S. Tang**, H. Sakhi, L.A. Celi, J.M. Newsome, D.L. Rubin, H. Trivedi, J.W. Gichoya, I. Banerjee, Fusion of Imaging and Non-Imaging Data for Disease Trajectory Prediction for COVID-19 Patients, *Under Review*
- **S. Tang**, A. Ghorbani, R. Yamashita, S. Rehman, J.A. Dunnmon, J. Zou, D.L. Rubin, Data Valuation for Medical Imaging Using Shapley Value and Application to A Large-scale Chest X-ray Dataset, *Scientific Reports*, 11:8366, 2021
- R.S. Lee, J.A. Dunnmon, A. He, **S. Tang**, C. Ré, D.L. Rubin, Comparison of Segmentation-Free and Segmentation-Dependent Computer-Aided Diagnosis of Breast Masses on a Public Mammography Dataset, *Journal of Biomedical Informatics*, 113:103656, 2021
- **S. Tang***, N. Sun*, D.L. Floris, X. Zhang, A. Di Martino, B.T.T. Yeo, Reconciling Dimensional and Categorical Models of Autism Heterogeneity: A Brain Connectomics and Behavioral Study, *Biological Psychiatry*, 87:1071–1082, 2020
- V. Kebets, A. J. Holmes, C. Orban, **S. Tang**, J. Li, N. Sun, R. Kong, R. Poldrack, B.T.T. Yeo, Somatosensory-Motor Dysconnectivity Spans Multiple Transdiagnostic Dimensions of Psychopathology, *Biological Psychiatry*, 86:779-791, 2019
- **S. Tang**, R. Ghosh, N. V. Thakor, and S. L. Kukreja, Orientation Estimation and Grasp Type Detection of Household Objects for Upper Limb Prostheses With Dynamic Vision Sensor, *Biomedical Circuits and Systems Conference (BioCAS), 2016 IEEE*, Oct 2016, pp. 99-102
- R. Ghosh, **S. Tang**, M. Rasouli, N. V. Thakor, and S. L. Kukreja, Pose-Invariant Object Recognition for Event-Based Vision With Slow-ELM, *International Conference on Artificial Neural Networks (ICANN), 2016,* Sep 2016, pp. 455-462

CONFERENCES AND PRESENTATIONS

Heart Rhythm 2022, San Francisco, USA — Apr 2022

- Oral presentation, "Machine Learning-Enabled Multimodal Fusion of Intra-Atrial and Body Surface Signals in Prediction of Atrial Fibrillation Ablation Outcomes"

International Conference on Learning Representations 2022 — Apr 2022

- Poster presentation, "Self-Supervised Graph Neural Networks for Improved Electroencephalographic Seizure Analysis"

American Epilepsy Society (AES) Annual Meeting 2020 — Dec 2020

- Poster presentation, "From Adults to Neonates: Transfer and Meta-learning Approaches for Knowledge Generalization in Deep Networks for Electroencephalographic Analysis"

Organization for Human Brain Mapping (OHBM) 2018, Singapore — Jun 2018

- Poster presentation, "Latent Factors with Dissociable Functional Connectivity Patterns, Behaviors and Demographics in Autism Spectrum Disorder"

12th IEEE International Conference on Biomedical Circuits and Systems (BioCAS), Shanghai, China — Oct 2016

- Poster presentation and live demonstration, "Orientation Estimation and Grasp Type Detection of Household Objects for Upper Limb Prostheses with Dynamic Vision Sensor"

AWARDS

- Highest Scoring Abstract Award in Digital Health, Heart Rhythm 2022 — Apr 2022
- Electrical Engineering Departmental Fellowship, Stanford University — Sep 2018 – Jun 2019
- Honorable Mention for Live Demonstration, IEEE BioCAS 2016 — Oct 2016
- Dean's Lister, National University of Singapore — Jan 2013 & Aug 2014
- Science and Technology Undergraduate Scholarship, National University of Singapore — Aug 2012 – Jun 2016