Rongguang Wang

CONTACT

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RESEARCH INTERESTS

Machine learning, especially deep learning in the context of medical image analysis with an application emphasis on neuroscience.

EDUCATION

University of Pennsylvania, Philadelphia, PA
Ph.D. in Electrical and Systems Engineering, expected June 2024
GPA: 3.9/4.0, Advisors: Christos Davatzikos, Pratik Chaudhari

Cornell University, Ithaca, NY
M.Eng. in Electrical and Computer Engineering, December 2018
GPA: 3.8/4.0, Advisor: Mert Sabuncu

University of Nottingham, Ningbo, China
B.Eng. in Electrical and Electronic Engineering, July 2017
GPA: 3.9/4.0, First class degree

RESEARCH EXPERIENCE

Automatic rheumatoid arthritis severity quantification
Johnson & Johnson, Spring House, PA
Data Science Intern, June 2023 - August 2023

Autism spectrum disorder diagnosis using hypergraph neural network
Tsinghua University, Beijing, China
Research Assistant, April 2019 - July 2019

Brain multi-atlas segmentation using diffeomorphic registration neural network
Cornell University, Ithaca, NY
Research Assistant, August 2018 - December 2018

PUBLICATIONS

R. Wang, G. Erus, P. Chaudhari, C. Davatzikos "Adapting Machine Learning Diagnostic Models to New Populations Using a Small Amount of Data: Results from Clinical Neuroscience." *arXiv preprint*, 2023

H. Zhang, **R. Wang**, R. Hu, J. Zhang, J. Li "DeDA: Deep Directed Accumulator." *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2023 (Early Accept)

H. Zhang, **R. Wang**, J. Zhang, D. Liu, C. Li, J. Li "Spatially Covariant Lesion Segmentation." *International Joint Conference on Artificial Intelligence (IJCAI)*, 2023 (Oral)

R. Wang, V. Bashyam, Z. Yang, F. Yu, V. Tassopoulou, S. Chintapalli, I. Skampardoni, L. Sreepada, D. Sahoo, K. Nikita, A. Abdulkadir, J. Wen, C. Davatzikos "Applications of Generative Adversarial Networks in Neuroimaging and Clinical Neuroscience." *NeuroImage*, 2023

R. Wang, P. Chaudhari, C. Davatzikos "Bias in Machine Learning Models Can Be Significantly Mitigated by Careful Training: Evidence from Neuroimaging Studies." *Proceedings of the National Academy of Sciences (PNAS)*, 2023

R. Wang, P. Chaudhari, C. Davatzikos "Embracing the Disharmony in Medical Imaging: A Simple and Effective Framework for Domain Adaptation." *Medical Image Analysis*, 2022

R. Wang, P. Chaudhari, C. Davatzikos "Harmonization with Flow-based Causal Inference." *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2021

H. Zhang, J. Zhang, **R. Wang**, Q. Zhang, S. Gauthier, P. Spincemaille, T. Nguyen, Y. Wang "Geometric Loss for Deep Multiple Sclerosis Lesion Segmentation." *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2021 (Best Paper Finalist)

H. Zhang, J. Zhang, **R. Wang**, Q. Zhang, P. Spincemaille, T. Nguyen, Y. Wang "Efficient Folded Attention for 3D Medical Image Reconstruction and Segmentation." *AAAI Conference on Artificial Intelligence (AAAI)*, 2021

TEACHING

University of Pennsylvania, Teaching Assistant
- Machine Learning (CIS 520), Lyle Ungar, Fall 2021
- Deep Learning for Data Science (CIS 522), Konrad Kording, Spring 2021
- Principles of Deep Learning (ESE 546), Pratik Chaudhari, Fall 2020

AWARDS

2019-2020	The Dean's Fellowship, University of Pennsylvania
2016-2017	Provincial Scholarship, Education Department of Zhejiang
2016-2017	Nottingham Advantage Award, University of Nottingham
2016-2017	Dean's Scholarship, University of Nottingham
2014-2016	Head's Scholarship, University of Nottingham

SERVICES

Editorial Board: Radiology: Artificial Intelligence (Trainee)
Journal Reviewer: Nature Communications, IEEE Transactions on Pattern Analysis and Machine Intelligence, Transactions on Machine Learning Research, Medical Image Analysis, IEEE Transactions on Medical Imaging, Alzheimer's & Dementia, IEEE Transactions on Neural Networks and Learning Systems, Radiology, Radiology: Artificial Intelligence, NeuroImage, NeuroImage: Clinical, European Radiology, Magnetic Resonance in Medicine, IEEE Journal of Biomedical and Health Informatics, Human Brain Mapping, Neurocomputing, Journal of Magnetic Resonance Imaging, Academic Radiology, IEEE Access, Journal of Neuroimaging, Journal of Digital Imaging, Patterns
Conference Reviewer: NeurIPS, ICML, ICLR, ECCV, AISTAT, IJCAI, ECML-PKDD, ACM-MM, MICCAI, ISBI, MIDL, ML4H, BMVC, OHBM
Seminar Panelist: GRASP Lab

INVITED TALKS

Jan 2024	*Decoding Heterogeneity in Neuroimaging with Machine Learning*, Stanford
Nov 2023	*Treating Healthcare Disparities with Domain Adaptation*, Yale University
Nov 2022	*Harmonization with Flow-based Causal Inference*, Penn SIVE Center
May 2022	*Embracing the Disharmony in Medical Imaging*, University of Edinburgh

COURSEWORK

Machine Learning	Convex Optimization	Deep Learning
Probability Theory	Linear Systems Theory	Data Mining
Bayesian Statistics	Computer Vision	Algorithm Analysis

RELEVANT SKILLS

Languages: Chinese, English, German (basic).
Development Tools: PyTorch, TensorFlow, LaTeX, Linux/Unix.
Programming: Python, Java, C/C++, SQL, Matlab, JavaScript, R.