

Anton Orlichenko

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EDUCATION

Tulane University, New Orleans, LA, USA

- Ph.D. in Biomedical Engineering Aug 2020 – Present
 - Thesis: Algorithms and Software for Analysis of Functional Connectivity and Prediction of Subject Phenotypes
 - Adviser: Dr. Yu-Ping Wang
 - Focus: Interpretable deep learning, multi-modal brain imaging, brain network analysis, neuroimaging software development, multi-omics
 - Cumulative GPA: 3.98 / 4.0
 - Expected Graduation: Dec 2024

Illinois Institute of Technology, Chicago, IL, USA

- B.S. in Electrical and Computer Engineering (Dual Degree) Aug 2006 – Dec 2010
 - Graduated Cum Laude.
 - Cumulative GPA: 3.70 / 4.0
 - Major GPA: 3.87 / 4.0 (CPE), 3.82 / 4.0 (EE)

WORK EXPERIENCE

Tulane University, New Orleans, LA, USA

- Teaching Assistant Aug 2022 – Dec 2024
 - Helped teach data science in medical imaging class for graduate students
 - Graded assignments and assisted students with MATLAB programming projects and mathematical derivations

Community College of Allegheny County, Pittsburgh, PA, USA

- Adjunct faculty in Computer Information Technology department Jan 2018 – Jul 2020
 - Taught introductory programming courses using the Java language
 - Taught web development technologies including HTML 5, JavaScript, and CSS
- Chemistry, physics, and computer programming tutor Aug 2015 – Jul 2021
 - Tutored students in general and organic chemistry, physics, and computer programming
 - Aided students in programming in Java, C, C++, and assembly language
 - Prepared students for exams and helped with labs, projects, and assignments

Motorola, Inc., Schaumburg, IL, USA

- Student Intern Jan 2010 – Dec 2010
 - Designed coverage for complex two-way radio systems
 - Minimized costs of countywide simulcast designs
 - Optimized channel utilization for countywide systems using frequency reuse planning

RESEARCH EXPERIENCE

Tulane University, New Orleans, LA, USA

- Research Assistant Aug 2020 – Present
 - Developed machine learning algorithms and software using fMRI/omics for prediction of subject phenotypes
 - Created Latent Similarity model superior at low sample sizes found in many fMRI dataset
 - Wrote ImageNomer software package to quickly analyze fMRI/omics datasets and identify trends/confounders in data
 - Identified changes in functional connectivity that occur with normal aging in the UK Biobank longitudinal cohort
 - Created novel generative model for disentangling demographics from functional connectivity/omics
 - Distributed machine learning models and software via GitHub, Docker, and pip repositories

Illinois Institute of Technology, Chicago, IL, USA

- Undergraduate Researcher 2008 – 2010
 - Created software processing pipelines for MRI diffusion tensor imaging data
 - Identified novel alterations in DTI fractional anisotropy of uncinate fasciculus in social phobia patients
 - Helped develop a state of the art diffusion tensor atlas of the human brain

PUBLICATIONS

JOURNALS

- [1] [Orlichenko A](#), Su KJ, Shen H, Deng HW, and Wang YP. Somatomotor-visual resting state functional connectivity increases after 2 years in the UK Biobank longitudinal cohort. *Journal of Medical Imaging* Apr 2024 11(2):024010.

- [2] Orlichenko A, Daly G, Zhou Z, Liu A, Shen H, Deng HW, and Wang YP. ImageNomer: Description of a functional connectivity and omics analysis tool and case study identifying a race confound. *Neuroimage Rep.* Dec 2023 3(4):100191.
- [3] Orlichenko A, Qu G, Zhang G, Patel B, Wilson TW, Stephen JM, Calhoun VD, and Wang YP. Latent Similarity Identifies Important Functional Connections for Phenotype Prediction. *IEEE Transactions on Biomedical Engineering.* Jun 2023 70(6):1979-1989.
- [4] Qu G, Orlichenko A, Wang J, Zhang G, Xiao Li, Zhang K, Wilson TW, Stephen JM, Calhoun, VD, and Wang YP. Interpretable cognitive ability prediction: A comprehensive gated graph transformer framework for analyzing functional brain networks. *IEEE Transactions on Medical Imaging.* Apr 2024 (43)4:1568-1578.
- [5] Patel B, Orlichenko A, Patel A, Qu G, Wilson TW, Stephen JM, Calhoun VD, and Wang YP. Explainable multimodal graph isomorphism network for interpreting sex differences in adolescent neurodevelopment. *Applied Sciences.* Mar 2024 (14)10:4144.
- [6] Peng H, Orlichenko A, Dawe RJ, Agam G, Zhang S, and Arfanakis K. Development of a human brain diffusion tensor template. *Neuroimage.* Jul 2009 46(4):967-80.
- [7] Phan KL, Orlichenko A, Boyd E, Angstadt M, Coccaro EF, Liberzon I, and Arfanakis K. Preliminary evidence of white matter abnormality in the uncinate fasciculus in generalized social anxiety disorder. *Biol Psychiatry.* Oct 2009 66(7):691-4.

CONFERENCES

- [1] Orlichenko A, Qu G, Ziyu Z, Liu A, Shen H, Deng HW, Ding Z, and Wang YP, “Low Rank Mixup Augmentations for Contrastive Learning of Phenotypes from Functional Connectivity,” in *Medical Imaging Meets NeurIPS*, New Orleans, LA, USA, Dec 2023.
- [2] Orlichenko A, Ahmadimehr S, Zhang G, Qu G, Ding Z, and Wang YP, “Dynamic Dictionary Entries are Rank-1 Functional Connectivity Networks Associated with Maturation,” in *Organization for Human Brain Mapping*, Montreal, Quebec, Canada, Jul 2023.
- [3] Orlichenko A, Daly G, Freeman JW, and Wang YP, “ImageNomer: developing an interactive graphical analysis tool for examining fMRI and omics data”, *Proc. SPIE 12468, Medical Imaging 2023: Biomedical Applications in Molecular, Structural, and Functional Imaging*, 1246812 (10 April 2023); San Diego, CA, USA.
- [4] Orlichenko A, Qu G, and Wang YP, “Phenotype guided interpretable graph convolutional network analysis of fMRI data reveals changing brain connectivity during adolescence”, *Proc. SPIE 12036, Medical Imaging 2022: Biomedical Applications in Molecular, Structural, and Functional Imaging*, 1203612 (4 April 2022); San Diego, CA, USA.

IN SUBMISSION

- [1] Orlichenko A, Qu G, Liu A, Deng HW, Ding Z, Wilson TW, Stephen JM, Calhoun VD, and Wang YP. A demographic-conditioned variational autoencoder for fMRI distribution sampling and removal of confounds. *IEEE Transactions on Biomedical Engineering*, 2024.
- [2] Zhou Z, Orlichenko A, Qu G, Fu Z, Ding Z, and Wang YP. An interpretable cross-attentive multi-modal MRI fusion framework for schizophrenia diagnosis. *IEEE Transactions on Biomedical Engineering*, 2024.

PRESENTATIONS

- Tulane Research, Innovation, and Creativity Summit Apr 2024
Presented work on demographic-conditioned variational autoencoder for fMRI data
- MidSouth Computational Biology and Bioinformatics Society Mar 2024
Presented work on data augmentations for contrastive learning of functional connectomes
- SPIE: Medical Imaging 2023 Feb 2023
Presented work on ImageNomer connectome/omics analysis software and identification of confounds
- SPIE: Medical Imaging 2022 Feb 2022
Presented work on phenotype-guided interpretable graph convolutional network model for analysis of fMRI

SERVICE TO PROFESSION

- Reviewer for *IEEE Transactions on Medical Imaging*
- Reviewer for *Frontiers in Aging Neuroscience*

- Reviewer for Imaging Neuroscience
- Reviewer for SPIE Journal of Electronic Imaging
- Reviewer for SPIE Optical Engineering

SKILLS

- Programming: Python, PyTorch, MATLAB, C/C++/Java, Go, SQL, JavaScript, HTML, PHP, R
- Database: MySQL, MariaDB
- Other: Git, Docker, pip, Flask, Vue, HTMX, \LaTeX

AWARDS & SCHOLARSHIPS

- IEEEExtreme 2023 Programming Competition Region Winner Oct 2023
Reached rank 1 in IEEE Region 5 in the IEEEExtreme 17.0 24-hour programming competition.
Scored in the top 15% of teams overall.
- SPIE: Medical Imaging Student Travel Award Dec 2022
Monetary award for travel to present the “ImageNomer” paper at SPIE: MI 2023 in San Diego.
- Research Experience for Undergraduates Award Jun 2009 – Aug 2009
Paid stipend for summer research based on previous work at the IIT MRI lab.
- Marvin Camras Scholarship, Illinois Institute of Technology 2006 – 2010
Full tuition scholarship based on academic merit.
- Eta Kappa Nu Member 2007
- Tau Beta Pi Member 2007

PROFESSIONAL AFFILIATIONS & ACTIVITIES

- **Computer Society Member,**
Institute of Electrical and Electronics Engineers
- Graduate Student Member 2022 – Present

[CV compiled on 2024-08-22]