Anton Orlichenko

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EDUCATION

Tulane University, New Orleans, LA, USA

- Ph.D. in Biomedical Engineering — Aug 2020 – Dec 2024
  - Thesis: Creation of Algorithms and Tools for the Study of Brain Development with the Identification of Confounds
  - Advisor: 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

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 – Dec 2024
  - Developed machine learning algorithms and software using fMRI/omics for prediction of subject phenotypes
  - Created Latent Similarity model that is superior at the 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 Instiute 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.

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 interprettable 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

- IEEEXtreme 2023 Programming Competition Region Winner — Oct 2023
  Reached rank 1 in IEEE Region 5 in the IEEEXtreme 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 2025-01-05]