# THE UNIVERSITY OF GEORGIA
# DEPARTMENT OF STATISTICS

## *Colloquium Series*

**2/29/2024**

**4:00 PM, Room 204, Caldwell Building**


# Josh Lukemire

Research Assistant Professor, Emory University Department of Biostatistics and Bioinformatics


## A general framework for brain network extraction from fMRI data with repeated measurements


We introduce a general framework for decomposing brain function into functional brain networks for multi-subject data with repeated measurements and covariate effects. This general method provides a much-needed tool for investigating brain networks and their differences in imaging studies with complex study designs including longitudinal and/or multi-center studies. Our approach incorporates effects corresponding to data collection sites to correct for site-level biases and incorporates subject-specific effects to accommodate within-subject repeated measures such as those from longitudinal studies. Through simulations, we show that the proposed method has considerably improved performance as compared to other potential ICA-based approaches. We apply our procedure to study internalization and externalization in the longitudinal Adolescent Brain Cognitive Development study data and demonstrate functional brain network differences that supplement previous work showing age and sex related differences.


## About the Speaker

Dr. Josh Lukemire is a research assistant professor in the Department of Biostatistics and Bioinformatics at Emory University. His main research focus involves developing and applying statistical techniques for analyzing high-dimensional imaging data, with a specific interest in developing models for identifying brain network differences between clinical groups. He is also interested in other types of imaging, including pediatric applications of near-infrared spectroscopy to monitor red blood cell transfusion efficacy.