

Long Feng
Department of Statistics and Actuarial Science
University of Hong Kong



**Sparse Kronecker Product Decomposition: A General
Framework of Signal Region Detection in Image Regression**

Tuesday, November 22, 2022
11:50 AM

110 Frelinghuysen Road, Hill Center, Room 552

Zoom Meeting: Meeting ID: 99075124232
Password: 952486

<https://rutgers.zoom.us/j/99075124232?pwd=UDdPVjRncXZFcXpvaFE0OWJyMVdSUT09>

Light refreshments will be served

Abstract: Image data and image regression/classification are intensively studied in many computer vision tasks. However, most existing studies on such topics focused on outcome prediction, while the research on model interpretation and image region detection is rather limited, even though the latter is often more important. In this talk, we introduce the first Frequentist framework named Sparse Kronecker Product Decomposition (SKPD) to detect significant regions in image regression/classification problems. The SKPD framework is general in the sense that it works for both matrices (e.g., 2D grayscale images) and (high-order) tensors (e.g., 2D color images, 3D images) represented image data. Moreover, unlike many Bayesian approaches, our framework is computationally scalable for high-resolution image problems. The SKPD is highly connected to convolutional neural networks (CNN), particularly to CNN with one convolutional layer and one fully connected layer. The effectiveness of SKPDs is validated by real brain MRI data in the UK Biobank Database.

Bio: Long Feng is an Assistant Professor in the Department of Statistics and Actuarial Science at the University of Hong Kong. He obtained his PhD in Statistics from Rutgers University in 2017. After that, he did Postdoctoral training in the Department of Biostatistics at Yale University. His current research interests focus on statistical machine learning, image data analysis, high-dimensional statistics, etc.

