PRINCIPAL DIRECTIONS OF MEDIATION

A TALK BY MARTIN LINDQUIST

DEPARTMENT OF BIOSTATISTICS
JOHNS HOPKINS SCHOOL
OF PUBLIC HEALTH

18 FEBBRAIO
16:00

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SEMINARIO IN MODALITA' TELEMATICA

Mediation analysis is an important tool in the behavioral sciences for investigating the role of intermediate variables that lie in the path between a randomized treatment/exposure and an outcome variable. The influence of the intermediate variable on the outcome is often explored using structural equation models (SEMs), with model coefficients interpreted as possible effects. While there has been significant research on the topic in recent years, little work has been done on mediation analysis when the intermediate variable (mediator) is a high-dimensional vector. In this work we introduce a novel method for mediation analysis in this setting called the principal directions of mediation (PDMs). We demonstrate the method using a functional magnetic resonance imaging (fMRI) study of thermal pain where we are interested in determining which brain locations mediate the relationship between the application of a thermal stimulus and self-reported pain.

MARTIN LINDQUIST is a Professor of Biostatistics at Johns Hopkins University. His research focuses on mathematical and statistical problems relating to functional Magnetic Resonance Imaging (fMRI). Dr. Lindquist is actively involved in developing new analysis methods to enhance our ability to understand brain function using human neuroimaging. He has published over 70 articles, and serves on the editorial boards of several scientific journals both in statistics and neuroimaging. He is a fellow of the American Statistical Association. In 2018 he was awarded the the Organization for Human Brain Mapping's 'Education in Neuroimaging Award' for teaching statistical issues to the neuroimaging community and the development of online classes that have taught fMRI methods to more than 80,000 students world-wide.

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