SEMINAR

DEPARTMENT OF STATISTICS
THE CHINESE UNIVERSITY OF HONG KONG

Analysis of Functional Connectivity Changes from Childhood to Old Age: A Study Using HCP-D, HCP-YA, and HCP-A Datasets

INVITED SPEAKER

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TIME

January 05, 2024 (Fri) · 10:30 am - 11:30 am

VENUE

LSB LT2 · Lady Shaw Building LT2 · CUHK

ABSTRACT

We introduce a new clustering-enabled regression method to investigate how age affects whole-brain functional connectivity (FC) in healthy individuals. By applying this method to combined fMRI data from three Human Connectome Project studies, we identify clusters of brain regions that share similar trajectories of FC changes from childhood to old age. Our findings reveal that age impacts FC in a varied manner across different brain regions. Most brain connections experience practically ignorable, despite statistically significant, FC changes with age. Only a tiny proportion of connections exhibit substantial age-related changes in FC. FC of these connections within the same brain system tends to decrease consistently over time, while FC between different systems demonstrates diverse patterns of age-related changes, highlighting the complex process of brain changes with age. We also found that while young males and females have similar FC, it becomes increasingly different as they age.