Emergent Research:
The PIMS Postdoctoral Fellow Seminar

Feb 21, 2024 | 9:30am Pacific

Pacific Institute for the Mathematical Sciences

Computational Inference for Directions in Canonical Correlation Analysis

ABSTRACT:
Canonical Correlation Analysis (CCA) is a method for analyzing pairs of random vectors; it learns a sequence of paired linear transformations such that the resultant canonical variates are maximally correlated within pairs while uncorrelated across pairs. CCA outputs both canonical correlations as well as the canonical directions which define the transformations. While inference for canonical correlations is well developed, conducting inference for canonical directions is more challenging and not well-studied, but is key to interpretability. We propose a computational bootstrap method (combootcca) for inference on CCA directions. We conduct thorough simulation studies that range from simple and well-controlled to complex but realistic and validate the statistical properties of combootcca while comparing it to several competitors. We also apply the combootcca method to a brain imaging dataset and discover linked patterns in brain connectivity and behavioral scores.

For more information and registration:
https://www.pims.math.ca/seminars/PIMSPDF

Daniel Kessler
PIMS-Simons PDF, UWashington

SPEAKER BIO:
Dan completed his PhD in 2023 at the Department of Statistics at the University of Michigan where he was advised by Professor Liza Levina. He is currently an NSF Mathematical Sciences Postdoctoral Research Fellow at the University of Washington where he works with Professor Daniela Witten; in addition, he is concurrently both a PIMS-Simons and UW Data Science Postdoctoral Fellow. His research interests include the statistical analysis of networks, post-selection inference, high-dimensional statistics, applications involving human neuroimaging, computational and cognitive neuroscience, and high performance computing.

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