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MASTER'S THESIS PRESENTATION

Estimating the Correlation Structure of Z-scores for Trans-eQTLs Detection

WHEN
May, 11th, 2021
3:00 PM, CDT

WHERE
Via ZOOM
ZOOM information will be provided in the email announcement for this seminar.

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Estimating the correlations of z-scores is an important step in computing test statistics that consider the joint distribution of z-scores. For Trans-eQTLs detection, we are interested in the correlations of z-scores calculated on different expression traits. Our method improved the ordinary sample covariance estimator by two ways: i) We applied optimal shrinkage to de-bias the sample eigenvalues to alleviate the random matrix effects brought by the high dimensionality of the genetic data. ii) We reduced the dependence between the individual samples covariance to achieve lower variance based on the correlation structure of z-score matrix obtained under some special cases. We applied our methods to simulated data from AIL mouse pedigree and found the accuracy improved under various matrix loss functions.

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