

## High-dimensional multivariate regression with grouped variables via convex regularization

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In many biological and other scientific applications, predictors are high-dimensional and often naturally grouped. For example, in biological applications, assayed genes or proteins are grouped by biological roles or biological pathways. When studying the association of a clinical outcome and the grouped predictors, it is desirable to select variables at both the group level and the within-group level. In some studies, response variables can also be high-dimensional with a natural group structure. For example, voxels of a brain image within an anatomic region of a human brain consist of a functionally related group. In this talk, I will introduce a new variable selection method in a multivariate regression setting with grouped predictors using a convex penalty. While having the numerical advantage due to convexity, the method not only effectively removes unimportant groups, but also maintains the flexibility of selecting variables within the identified groups, which is illustrated by simulations and a real data example. The oracle error bound can be derived.

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