

## Statistics and Data Science Seminar

### *Sparse Modeling of Functional Linear Regression via Fused Lasso with Application to Genotype-by-environment Interaction Studies*

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**Abstract:** The estimator of coefficient functions in an functional linear model (FLM) based on a small number of subjects is often inefficient. To address this challenge, we propose an FLM based on fused learning. This talk will describe a sparse multi-group FLM to simultaneously estimate multiple coefficient functions and identify groups, such that coefficient functions are identical within groups and distinct across groups. By borrowing information from relevant subgroups of subjects, our method enhances estimation efficiency while preserving heterogeneity in model parameters and coefficient functions. We use an adaptive fused lasso penalty to shrink coefficient estimates to a common value within each group. To enhance computation efficiency and incorporate neighborhood information, we propose to use graph-constrained adaptive lasso with a highly efficient algorithm. This talk will use two real data examples to illustrate the applications of the proposed method on genotype-by-environment interaction studies.

This talk features joint work with Aaron Kusmec, Lily Wang, and Dan Nettleton.

Wednesday, March 31 at 4:00 PM in Zoom