



THE UNIVERSITY OF
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Department of Statistics

DISSERTATION PROPOSAL

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Latent Variables in “Omic” Data

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ABSTRACT

An important phenomenon in high dimensional biological data is the presence of unobserved covariates that impact the measured response. For example, DNA methylation at any particular cytosine on the genome varies with cell type, but cellular composition is often impossible to measure. We have previously provided an estimator for the effect(s) of interest whose asymptotic variance is the same as when the latent factors are observed, have provably extended our method to correct for said factors in data with related individuals, and have used these methods to uncover novel biology. In this talk, I will propose a further extension of our research to data with non-random missing values, like high-resolution mass spectrometry data, and will discuss the possibility of uncovering latent biological factors from high dimensional tensor data.

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