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# Conditional Dense Linear Regression

Zongyi Li
*Washington University in St. Louis*

# Conditional Dense Linear Regression

*Zongyi Li*

*Mentor: Brendan Juba*

Our research follows Juba's recent work on Conditional Sparse Linear Regression, where given some examples, the algorithm finds a subset separated by a k-DNF condition, and a linear regression fit with low loss on the subset. The main shortcoming of his algorithm is that it only works if there exists a sparse regression fit. To extend the setting from to dense setting, we introduce and modify the techniques from Charikar et al., which at a high level, obtains a list of candidate parameter vectors by repeatedly finding the best parameters for each data point, and clustering the data by these parameters. Their algorithm could not be applied to linear regression since individual points do not give nontrivial estimates of the regression parameters. But, it seems that by considering the collection of points satisfying a term instead of individual points, we can obtain an algorithm that finds a list of candidate regression fits. From this list of candidate regression fits, we can find one that, on a subset of essentially the same size, obtains at most polynomially larger loss.