2. **Large-Scale SVM Regression** [35] Bottou demonstrated that a stochastic gradient descent solver for a variety of learning problems (including support vector machine optimization) is able to scale with extremely large datasets, while converging to the predictive performance of traditional optimization algorithms.

3. **Large-Scale L-Regularized Learning** [36] Stochastic coordinate descent (a method related to stochastic gradient descent, but with a slightly different update rule), can be used to learn sparse regression models, with small training-times, even for data sets where both the dimensionality and the number of training-points is large. This is the approach used in our preliminary work.

The net effect of this analysis will be to find the weighting of different factors that will lead us to conclude that two genes in some species are correlated. Then, using available Arabidopsis time-series data [22], and other datasets that are currently being generated in our lab and others, we will combine correlation with time-series [22,26-29] and perturbation approaches using Graphical Lasso [37] to form causal networks.

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