Regularization Paths for Generalized Linear Models via Coordinate Descent

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We develop fast algorithms for estimation of generalized linear models with convex penalties. The models include linear regression, two-class logistic regression, and multinomial regression problems while the penalties include ℓ_1 (the lasso), ℓ_2 (ridge regression) and mixtures of the two (the elastic net). The algorithms use cyclical coordinate descent, computed along a regularization path. The methods can handle large problems and can also deal efficiently with sparse features. In comparative timings we find that the new algorithms are considerably faster than competing methods. The software is on CRAN in the package `glmnet`.

References

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