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Regression analysis and resampling methods

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Abstract

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2 Theory

2.1 Standard

$$\beta = \left(\mathbf{X}^T\mathbf{X}\right)^{-1}\mathbf{X}^T\mathbf{y}$$

2.2 Ridge

$$\beta = \left(\mathbf{X}^T\mathbf{X} + \lambda\mathbf{I}\right)^{-1}\mathbf{X}^T\mathbf{y}$$

2.3 Lasso

$$\beta = \mathrm{argmin}_\beta \left\{ \sum_{i=1}^{N} \left(y_i - \beta_0 - \sum_{j=1}^{p} x_{ij}\beta_j \right)^2 + \lambda \sum_{j=1}^{p} |\beta_j|^q \right\}$$

2.4 k-fold and bootstrap

3 Method

4 Result & Discussion

5 Conclusion

References

[1] Morten Hjorth-Jensen. *Computational Physics*. Lecture notes. 2015. URL: `https://github.com/CompPhysics/ComputationalPhysics/blob/master/doc/Lectures/lectures2015.pdf`.

6 Appendix