

Cyclic Coordinate Descent for Logistic Regression with Lasso regularization

Patryk Prusak

supervisor

XYZ

Warsaw University of Technology

March 4, 2025

Advanced Machine Learning Course

Contents

1	Methodology	2
1.1	Selection and generation of datasets	2
1.2	Details about algorithm implementation and applied optimizations	2
2	Discussion about correctness of the LogRegCCD algorithm	2
2.1	Performance of the algorithm at $\lambda=0$	2
2.2	Likelihood function values and coefficient values depending on iteration	2
2.3	Comparison with ready implementation of logistic regression with L1 penalty . . .	2
3	Impact of dataset parameters: n, p, d, g on the performance of LogRegCCD algorithm	2
4	Benchmark of LogRegCCD with LogisticRegression algorithm	2
4.1	Performance of algorithms regarding different metrics	2
4.2	Values of coefficients obtained in these two methods	2

1 Methodology

1.1 Selection and generation of datasets

1.2 Details about algorithm implementation and applied optimizations

2 Discussion about correctness of the LogRegCCD algorithm

2.1 Performance of the algorithm at $\lambda=0$

2.2 Likelihood function values and coefficient values depending on iteration

2.3 Comparison with ready implementation of logistic regression with L1 penalty

3 Impact of dataset parameters: n, p, d, g on the performance of LogRegCCD algorithm

4 Benchmark of LogRegCCD with LogisticRegression algorithm

4.1 Performance of algorithms regarding different metrics

4.2 Values of coefficients obtained in these two methods

List of Figures

List of Tables