Central University of Finance and Economics

中央财经大学

glm lasso for R

马景义课题组

统计与数学学院

2020 年 11 月 24 日

目录

1 Introduction

This document contains definitions of all the functions as well as a test case for the algorithm in the end of the article.

Here is the source file for the algorithm on github.

2 Comparison for glm_lasso and glmnet

2.1 For rho

n = 400, p = 1000, pmax = 9

表 1: Time consuming - Comparison for two models when rho is changed

	rho = 0.1	rho = 0.3	rho = 0.5	rho = 0.7	rho = 0.9
glm_lasso	2.07	2.22	2.18	0.85	1.69
glmnet	0.03	0.03	0.03	0.02	0.02

表 2: Recall - Comparison for two models when rho is changed

	rho = 0.1	rho = 0.3	rho = 0.5	rho = 0.7	rho = 0.9
glm_lasso	1	1	0.83	0.83	0.67
glmnet	1	1	0.83	0.83	0.50

表 3: Precision - Comparison for two models when rho is changed

	rho = 0.1	rho = 0.3	rho = 0.5	rho = 0.7	rho = 0.9
glm_lasso	0.6	0.6	0.5	0.5	0.4
glmnet	0.6	0.6	0.5	0.5	0.3

2.2 For n

rho = 0.5, p = 1000, pmax = 9

表 4: Time consuming - Comparison for two models when n is changed

	n = 200	n = 400	n = 800	n = 1600	n = 3200
glm_lasso	1.36	3.17	5.67	8.58	24.90
glmnet	0.01	0.03	0.06	0.13	0.22

表 5: Recall - Comparison for two models when n is changed

	n = 200	n = 400	n = 800	n = 1600	n = 3200
glm_lasso	0.83	1	1	1	1
glmnet	0.67	1	1	1	1

表 6: Precision - Comparison for two models when n is changed

	n = 200	n = 400	n = 800	n = 1600	n = 3200
glm_lasso	0.5	0.6	0.6	0.6	0.6
glmnet	0.4	0.6	0.6	0.6	0.6

2.3 For p

rho = 0.5, n = 400, pmax = 9

表 7: Time consuming - Comparison for two models when p is changed

	p = 50	p = 100	p = 250	p = 500	p = 1000
glm_lasso	1.06	0.87	1.93	1.96	2.04
glmnet	0.01	0.00	0.01	0.04	0.03

表 8: Recall - Comparison for two models when p is changed

	p = 50	p = 100	p = 250	p = 500	p = 1000
glm_lasso	1	1	1	1	1
glmnet	1	1	1	1	1

表 9: Precision - Comparison for two models when p is changed

	p = 50	p = 100	p = 250	p = 500	p = 1000
glm_lasso	0.6	0.6	0.6	0.6	0.6
glmnet	0.6	0.6	0.6	0.6	0.6

2.4 For pmax

rho = 0.5, n = 400, p = 1000

表 10: Time consuming - Comparison for two models when pmax is changed

	pmax = 2	pmax = 4	pmax = 8	pmax = 16	pmax = 32
glm_lasso	0.40	0.97	1.22	2.16	4.35
glmnet	0.03	0.03	0.02	0.03	0.03

表 11: Recall - Comparison for two models when pmax is changed

	pmax = 2	pmax = 4	pmax = 8	pmax = 16	pmax = 32
glm_lasso	0.5	0.83	1	1	0.83
glmnet	0.5	0.83	1	1	1.00

表 12: Precision - Comparison for two models when pmax is changed

	pmax = 2	pmax = 4	pmax = 8	pmax = 16	pmax = 32
glm_lasso	1	1	0.86	0.67	0.45
glmnet	1	1	0.86	0.67	0.55