

Linear Methods for Classification

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Abstract

The following are notes on the key results from the **Elements of Statistical Learning** text. They were primarily derived from course notes and readings in the Stanford STATS 315: *Modern Applied Statistics* series.

Contents

1	Discriminant analysis	2
1.1	LDA rule derivation	2
1.2	QDA rule derivation	2
1.3	LDA computation: sphering the data	2
1.4	Computations for reduced-rank LDA	2
1.5	Rayleigh quotient and canonical discriminant analysis	2
2	LDA vs. least squares fit	3
2.1	Least squares regression coefficient is identical to LDA coefficient, up to scalar multiple	3
2.2	Difference between LDA and OLS coefficient	3
3	Logistic regression	4
3.1	Derivation of logistic rule	4
3.2	Two-class algorithm for logistic regression	4
3.3	Newton-Raphson IRLS algorithm	4

1 Discriminant analysis

1.1 LDA rule derivation

1.2 QDA rule derivation

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1.4 Computations for reduced-rank LDA

1.5 Rayleigh quotient and canonical discriminant analysis

2 LDA vs. least squares fit

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3 Logistic regression

3.1 Derivation of logistic rule

3.2 Two-class algorithm for logistic regression

3.3 Newton-Raphson IRLS algorithm