Quiz 4

04 Gaussian Discriminant Analysis, Decompositions

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For the multiple choice questions, select *all* that apply.

1 Gaussian Discriminant Analysis

The following algorithms will yield a decision boundary even with data that is not linearly separable.

(a) Linear Discriminant Analysis

(b) Quadratic Discriminant Analysis

(c) Perceptrons

(d) Soft-Margin Support Vector Machine

The following always produces a linear decision boundary, regardless of the data provided to it.

(a) Linear Discriminant Analysis

(b) Quadratic Discriminant Analysis

(c) Perceptrons

(d) Hard-Margin Support Vector Machine

2 Decompositions

Prove that if v_i with eigenvalue λ_i is an eigenvector for a symmetric A, it is also an eigenvector for the outer product of $A - \lambda I$.

Consider a real, symmetric A, which admits an eigendecomposition. Prove that $\|A\|_F = \|\lambda\|_2$, where $\lambda = [\lambda_1, \lambda_2, \ldots, \lambda_n]^T$ for eigenvalues λ_i of A.