KTH Electrical Engineering

Pattern Recognition — Corrections

Fundamental Theory and Exercise Problems

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Lecture Notes www.kth.se/social/course/EN2202/

Chapter 5

Hidden Markov Models

5.4 Probability of Observed Sequence

Equation (5.26):

$$P\left[\underline{\boldsymbol{X}} = \underline{\boldsymbol{x}} \mid \lambda\right) = \sum_{i_1=1}^{N} q_{i_1} b_{i_1}(\boldsymbol{x}_1 \Bigg] \sum_{i_2=1}^{N} a_{i_1 i_2} b_{i_2}(\boldsymbol{x}_2) \cdots \sum_{i_T=1}^{N} a_{i_{T-1} i_T} b_{i_T}(\boldsymbol{x}_T)$$

should be

$$P\left[\underline{\boldsymbol{X}} = \underline{\boldsymbol{x}} \mid \lambda\right] = \sum_{i_1=1}^{N} q_{i_1} b_{i_1}(\boldsymbol{x}_1) \sum_{i_2=1}^{N} a_{i_1 i_2} b_{i_2}(\boldsymbol{x}_2) \cdots \sum_{i_T=1}^{N} a_{i_{T-1} i_T} b_{i_T}(\boldsymbol{x}_T)$$

Equation (5.46):

$$P\left[\boldsymbol{X}_2 = \boldsymbol{x}_2 \mid S_2 = j, \boldsymbol{x}_1, \lambda\right] = P\left[\boldsymbol{X}_2 = \boldsymbol{x}_2 \mid S_2 = j, \lambda\right) = b_j(\boldsymbol{x}_2]$$

should be

$$P\left[\boldsymbol{X}_2 = \boldsymbol{x}_2 \mid S_2 = j, \boldsymbol{x}_1, \lambda\right] = P\left[\boldsymbol{X}_2 = \boldsymbol{x}_2 \mid S_2 = j, \lambda\right] = b_j(\boldsymbol{x}_2)$$