

課題

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$$L(w) = \sum_{d^{(i)}, y^{(i)} \in D} \log P(y^{(i)} | d^{(i)}) - \frac{C}{2} |w|^2 \quad (1)$$

$$L(w) = \sum_{d^{(i)}, y^{(i)} \in D} (\log \exp(w \bullet \phi(d^{(i)}, y^{(i)})) - \log Z_{d^{(i)}, w} - \frac{C}{2} |w|^2) \quad (2)$$

$$L(w) = \sum_{d^{(i)}, y^{(i)} \in D} (w \bullet \phi(d^{(i)}, y^{(i)}) - \log Z_{d^{(i)}, w} - \frac{C}{2} |w|^2) \quad (3)$$

$$*P(y|d) = \frac{1}{Z_{d,w}} (w \bullet \phi(d, y))$$

$$*Z_{d,w} = \sum_y \exp(w \bullet \phi(d, y))$$

$$\nabla_w L(w) = \sum_{d^{(i)}, y^{(i)} \in D} (\phi(d^{(i)}, y^{(i)}) - \frac{\sum_y \phi(d^{(i)}, y) \exp(w \bullet \phi(d^{(i)}, y))}{Z_{d^{(i)}, w}}) - C_w \quad (4)$$

$$\nabla_w L(w) = \sum_{d^{(i)}, y^{(i)} \in D} (\phi(d^{(i)}, y^{(i)}) - \sum_y P(y|d^{(i)}) \phi(d^{(i)}, y)) - C_w \quad (5)$$