

Feature map for Polynomials

- A finite dimensional φ such that $\langle \varphi(q), \varphi(k) \rangle = \langle q, k \rangle^p$?
 - $\varphi : x \mapsto x^{\otimes p}$
 - If $x \in \mathbb{R}^h$, then $x^{\otimes p} \in \mathbb{R}^{h^p}$
 - $(x^{\otimes p})_{(i_1, i_2, \dots, i_p)} = x_{i_1} \cdot x_{i_2} \cdot \dots \cdot x_{i_p}$

Linear Attention using Polynomials