Kolmogorov-Arnold Representation Theorem
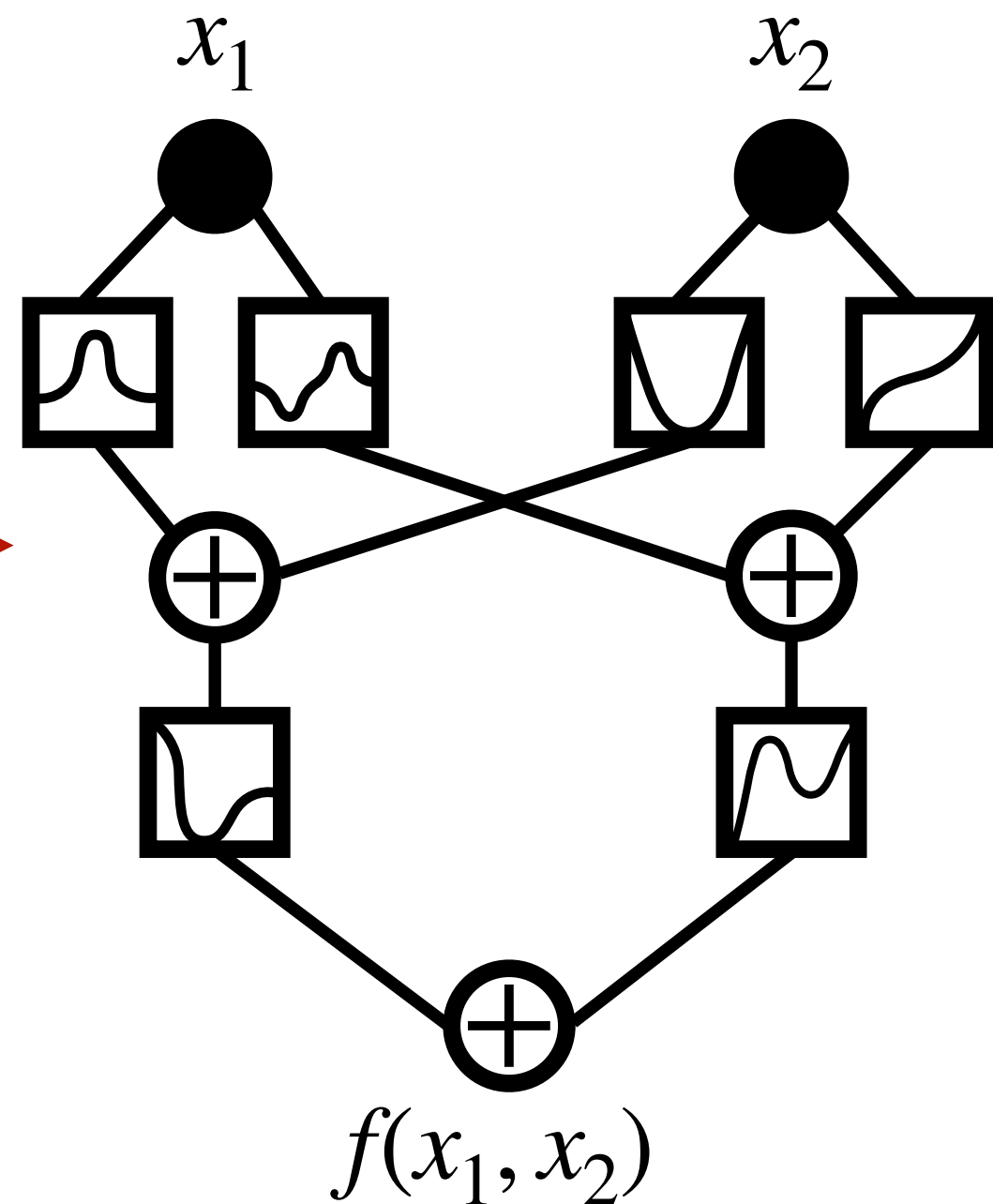
Any multivariate continuous function can be represented by a finite sum of univaritate functions and additions.
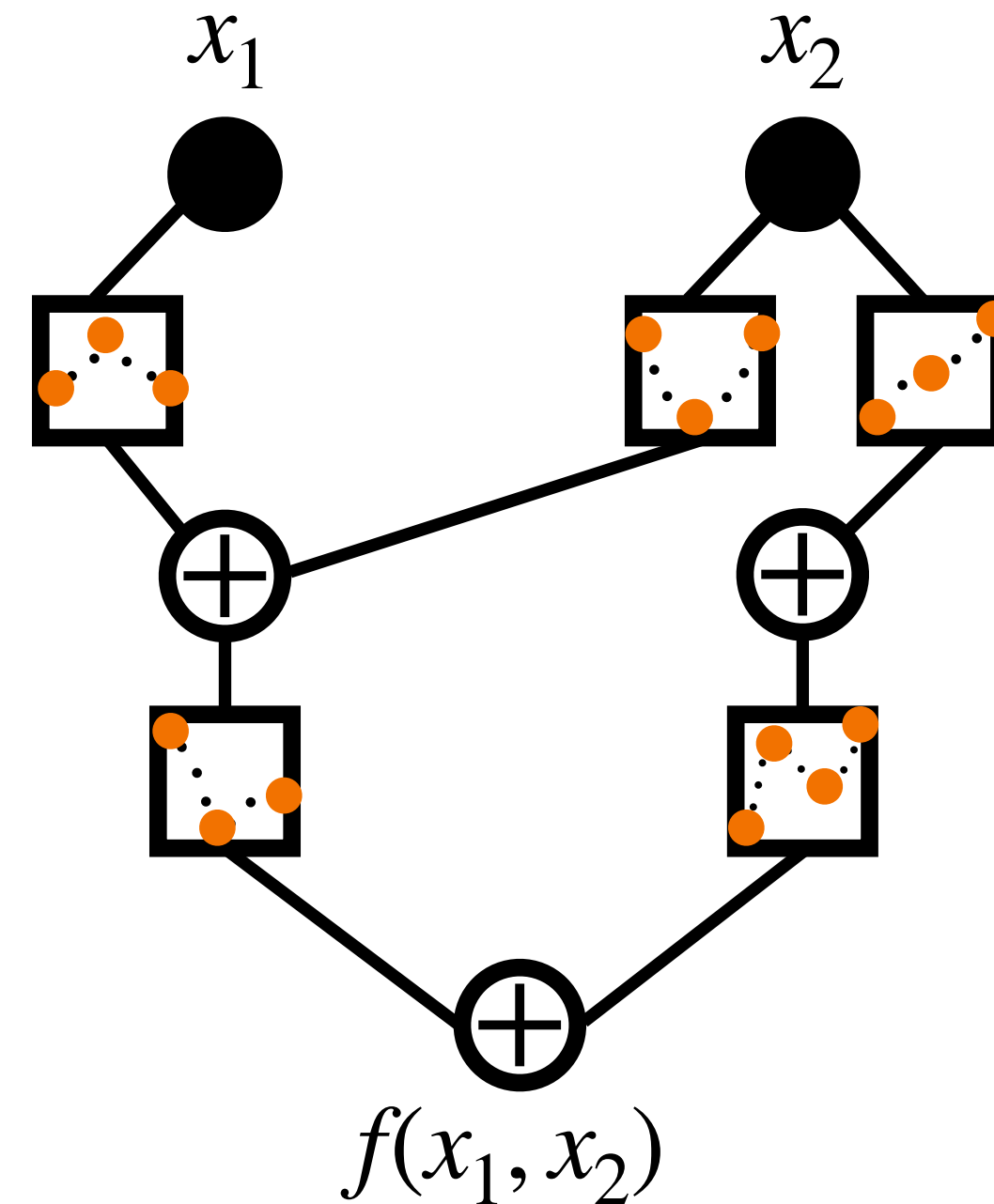
$$f(\mathbf{x}) = f(x_1, \cdots, x_n)$$

$$= \sum_{q=1}^{2n+1} \Phi_q \left(\sum_{p=1}^{n} \phi_{q,p}(x_p) \right)$$

Where $\phi_{q,p} : [0,1] \to \mathbb{R}$
and $\Phi_q : \mathbb{R} \to \mathbb{R}$

Kolmogorov-Arnold Network (KAN)

x_1 x_2

$f(x_1, x_2)$

Quantization & Pruning

x_1 x_2

$f(x_1, x_2)$

Efficient LUT-based implementation

x_1 x_2

$f(x_1, x_2)$