

$$w(\text{ocean}) = [0 \ 1 \ 0 \ 0 \ \dots \ 0]$$

$$w(\text{water}) = [0 \ 0 \ 0 \ 1 \ \dots \ 0]$$

⋮

$$w(\text{laptop}) = [0 \ 0 \ 0 \ 0 \ \dots \ 1]$$

sparse & high-dim

$$\sin(\text{ocean}, \text{water}) \Rightarrow \sin(\text{ocean}, \text{laptop})$$

$$\cos(\text{ocean}, \text{water}) \Rightarrow \cos(\text{ocean}, \text{laptop})$$

$$\frac{w(\text{ocean})^T w(\text{water})}{\|w(\text{ocean})\| \|w(\text{water})\|} \Rightarrow \frac{w(\text{ocean})^T w(\text{laptop})}{\|w(\text{ocean})\| \|w(\text{laptop})\|}$$

→ 0

0 ←

dense & low-dim (512 → 768 → 1,024)

