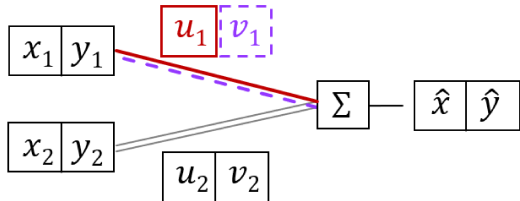


## Complex multiplication

$$\begin{aligned}\hat{z} &= zw \\ &= (x + iy)(\textcolor{red}{u} + i\textcolor{violet}{v}) \\ &= x\textcolor{red}{u} - y\textcolor{violet}{v} + i(x\textcolor{violet}{v} + y\textcolor{red}{u}) \\ &= \hat{x} + i(\hat{y})\end{aligned}$$

## Complex inner product



## 2-ch inner product w/ shared weights

