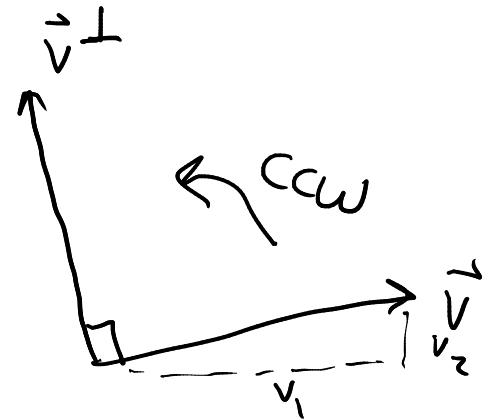# Orthogonal vector notation

$$\vec{V} = v_1 \hat{i} + v_2 \hat{j}$$

$$\vec{V}^{\perp} = -v_2 \hat{i} + v_1 \hat{j}$$

$$\vec{V} \cdot \vec{V}^{\perp} = v_1(-v_2) + v_2 v_1 = 0$$

$\vec{V}^{\perp}$ is the CCW orthogonal (perpendicular) vector to $\vec{V}$

WARNING: only on 2D

$$\vec{\omega} = \omega \hat{k}$$

$$\vec{\omega} \times \vec{V} = \omega \vec{V}^{\perp}$$

$$\vec{\omega} \times (\vec{\omega} \times \vec{V}) = \vec{\omega} \times \omega \vec{V}^{\perp} = \omega(\vec{\omega} \times \vec{V}^{\perp}) = -\omega^2 \vec{V}$$