

$$\rho(\mathbf{u}, \mathbf{v}) = \frac{(\mathbf{u} - \bar{\mathbf{u}}) \cdot (\mathbf{v} - \bar{\mathbf{v}})}{\|\mathbf{u} - \bar{\mathbf{u}}\| \|\mathbf{v} - \bar{\mathbf{v}}\|} = \frac{\sum_i (u_i - \bar{u})(v_i - \bar{v})}{\sqrt{\left(\sum_j (u_j - \bar{u})^2\right) \left(\sum_j (v_j - \bar{v})^2\right)}}$$