$$D_{\mathrm{JS}}[p,q] := \min_c \frac{1}{2}\left(D_{\mathrm{KL}}[p:c] + D_{\mathrm{KL}}[q:c]\right)$$

Variational definition of the Jensen-Shannon divergence

$$c = \frac{p+q}{2}$$

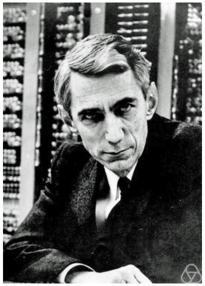
$$D_{\mathrm{JS}}[p,q] = \frac{1}{2}\left(D_{\mathrm{KL}}\left[p:\frac{p+q}{2}\right] + D_{\mathrm{KL}}\left[q:\frac{p+q}{2}\right]\right)$$

Bounded symmetrization of the Kullback-Leibler divergence

Jensen
1859-1925

Jensen-Shannon divergence = Jensen divergence for the Shannon negtentropy

$$\mathbf{D}_{\mathrm{JS}}[\mathbf{p},\mathbf{q}] = \mathbf{h}\left[\frac{\mathbf{p}+\mathbf{q}}{\mathbf{2}}\right] - \frac{\mathbf{h}[\mathbf{p}]+\mathbf{h}[\mathbf{q}]}{\mathbf{2}}$$



Shannon
1916-2001

$$\boxed{D_M^{\mathrm{vJS}}[p:q] := \min_c M\left(D[p:c], D[q:c]\right)}$$

Generalization of the variational JS divergence

M(a,b) is an **abstract mean**

like the arithmetic or geometric means