$\neq f$ -divergence

## f-divergence $I_f[p:q] := \int p(x) f\left(\frac{q(x)}{p(x)}\right) d\mu(x)$ $f_{\rm re}^{\alpha,\beta}(u) = -\left((1-\beta)\log\left(\alpha u + (1-\alpha)\right) + \beta u\log\left(\frac{1-\alpha}{u} + \alpha\right)\right)$

ordinary skewed Jensen-Shannon divergence  $D_{1S}^{\alpha,\beta}$  $D_{\text{IS}}^{\alpha,\beta}[p:q] := (1-\beta)D_{\text{KL}}[p:m_{\alpha}] + \beta D_{\text{KL}}[q:m_{\alpha}] =: I_{f_{\alpha}^{\alpha,\beta}}[p:q]$ 

 $D_{\rm JS}[p,q] := \frac{1}{2} \left( D_{\rm KL} \left[ p : \frac{p+q}{2} \right] + D_{\rm KL} \left[ q : \frac{p+q}{2} \right] \right) \quad D_{\rm JS}[p,q] := h \left[ \frac{p+q}{2} \right] - \frac{h[p] + h[q]}{2}$  $D_{JS}[p,q] := \min_{c \in \mathcal{D}} \frac{1}{2} (D_{KL}[p:c] + D_{KL}[q:c])$ Vector-skew  $D_{IS}^{\alpha,w}$ 

$$\mathbf{Vector\text{-}skew}\ D_{\mathrm{JS}}^{\alpha,w}$$

$$\bar{\alpha} = \sum_{i=1}^k w_i \alpha_i$$

$$D_{\mathrm{JS}}^{\alpha,w}(p:q) = h\left[(1-\bar{\alpha})p + \bar{\alpha}q\right] - \sum_{i=1}^k w_i h\left[(1-\alpha_i)p + \alpha_i\right]$$

$$D_{\mathrm{JS}}^{\alpha,w}(p:q) := \sum_{i=1}^k w_i D_{\mathrm{KL}}[(1-\alpha_i)p + \alpha_i q:(1-\bar{\alpha})p + \bar{\alpha}q]$$

$$f\text{-divergence}$$

 $f_{\alpha,w}(u) = \sum_{i=1}^k w_i(\alpha_i u + (1-\alpha_i)) \log \frac{(1-\alpha_i) + \alpha_i u}{(1-\overline{\alpha}) + \overline{\alpha} u}$ 

$$f_{lpha,w}(a)=\sum_{i=1}^{n}w_{i}(lpha_{i}a+(1-lpha_{i}))\log_{-}(1-ar{lpha})+ar{lpha}u$$

 $(M_{\alpha}, N_{\beta})$ -Jensen-Shannon divergence  $D_{IS}^{M_{\alpha}, N_{\beta}}$ 

variational 
$$M_{eta}$$
 Jensen-Shannon divergence  $D_{ ext{JS}}^{M_{lpha},N_{eta}}$  Variational  $M_{eta}$  Jensen-Shannon divergence  $D_{ ext{vJS}}^{M_{eta}}$ 

 $D_{\mathrm{JS}}^{M_{\alpha},N_{\beta}}(p:q) := N_{\beta}(D_{\mathrm{KL}}[p,(pq)_{\alpha}^{M}],D_{\mathrm{KL}}[q:,(pq)_{\alpha}^{M}])$ 

 $D_{\text{v,IS}}^{M_{\beta}}[p:q] := \min_{c \in \mathcal{D}} M_{\beta} \left( D[p:c], D[q:c] \right)$ 

 $(pq)_{\alpha}^{M}(x) := \frac{M_{\alpha}(p(x), q(x))}{\int M_{\alpha}(p(x), q(x)) d\mu(x)}$ 

 $\neq$  f-divergence