

- In the formula

$$C(P) = \sup_{F(x): E\kappa(X) \leq P} I(X; Y),$$

X can be a mixed random variable, so it is difficult to consider sequences that are typical w.r.t. $F(x)$.

- Need a new notion of joint typicality – **mutual typicality**.
- Recall that for any input distribution $F(x)$, $f(y)$ exists as long as $f(y|x)$ exists. Hence

$$I(X; Y) = E \log \frac{f(Y|X)}{f(Y)}.$$