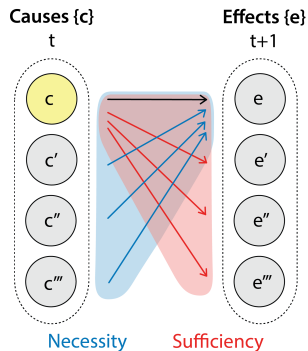


A**B****Causal Primitives****SUFFICIENCY**

$$\text{suff} = P(e|c)$$

NECESSITY

$$\text{nec} = 1 - P(e | C \setminus c)$$

*include c
invert scale* ↓

$$\text{nec}^\dagger = P(e | C)$$

DETERMINISM

$$\text{det} = 1 - \frac{\log_2 \frac{1}{\text{suff}}}{\log_2 n}$$

DEGENERACY

$$\text{deg} = 1 - \frac{\log_2 \frac{1}{\text{nec}^\dagger}}{\log_2 n}$$

Causation Measures**GALTON**

$$P(C|c)P(c)[\text{suff} + \text{nec} - 1]$$

EELLS

$$\text{suff} + \text{nec} - 1$$

SUPPES

$$\text{suff} - \text{nec}^\dagger$$

CHENG

$$\frac{\text{suff} + \text{nec} - 1}{\text{suff}}$$

LEWIS

$$\frac{\text{suff} + \text{nec} - 1}{\text{nec}}$$

EFFECT INFO

$$\log_2 \frac{\text{suff}}{\text{nec}^\dagger} = \log_2 n [\text{det} - \text{deg}]$$

C