Lec 14

* In linguistics:
  - Data may not entail hypothesis
  - We want hypothesis to entail data

Baye's Theorem

$$P(S|T)P(T) = P(S \cap T) = P(T|S)P(S)$$
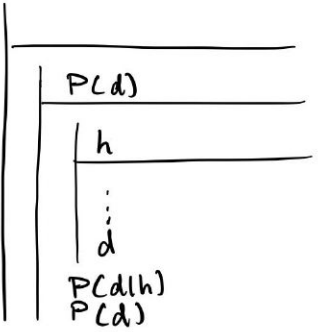
We care about: *h|d doesn't really make sense* ↓

$$P(\text{hypothesis} \mid \text{data}) = P(h|d) = \frac{P(d|h)P(h)}{P(d)}$$

These can be independently verified

Also, $$P(h) = \frac{P(h|d)P(d)}{P(d|h)}$$ ← *Allows our assignment of data probability in [0,1]*

P(d)
h
⋮
d
P(d|h)
P(d)

Pedagogic reasoning ← toy for kids experiment w~ instructions

- teacher instruction → quicker conclusion
- interrupted instruction → slower, play around to figure out

sampling assumption

$P_L(h|d) \propto P_T(d|h) P_L(h)$ ← teacher chose data deliberately

$P_T(d|h) \propto P_L(d|h)$ ← play around

$P_L(h|d) \propto P(d|h) P_L(h)$ ← believing data is randomly sampled

* Confidence that hypothesis can come from data correlates to faster conclusion?

→ Maybe also applies to Reader – Writer relationship?