HW4: 3.3 (8 pts), 3.5 (6 pts), 3.6 (6 pts),
3.8 (12 pts - 4 + 8), 3.9 (2 pts), 3.10 (12 pts, 4 extra points)
due Friday, 2/27 (note change in due date)

\[
P(A_i | A_i) = \begin{cases} 
  A_i & \text{true} \\
  1 - q_i & \text{false} 
\end{cases} \]

\[
P(B = \text{true} | A_1', \ldots, A_n') = 0 \text{ if and only if } A_1', \ldots, A_n' \text{ are all false}
\]

Noisy-OR is the most commonly used case of a noisy functional dependence model. Other ones
one Noisy-AND, Noisy-OR, Noisy-OR (which generalizes Noisy-OR to multi-valued inputs) and Noisy-OR (which generalizes Noisy-AND to multi-valued inputs).

There are a couple of very good papers on this, which could profitably be presented.

I want A to be in the OR relation with B.

\[ P(U) = \prod_{v \in U} P(v | pa(v)) = \]

\[ \begin{array}{c}
\text{or}(A, B)
\end{array} \]
\[
\text{Inference reasoning is used to infer causal relationships:}
\]

\[
I = \ldots \times P(\text{OR}(A, B) \mid A, B) \times \ldots ,
\]

So, the \( P(U) \) is \( \phi \) unless \( P(\text{OR}(A, B) \mid A, B) \neq 0 \) (in this case, unless \( P(\text{OR}(A, B) \mid A, B) = 1 \)).

Interventions

- Burglar
- Earthquake
- Alarm
- John
- Mary
- Sally

Excision semantics for causal inferential

\[\text{Interventions}\]