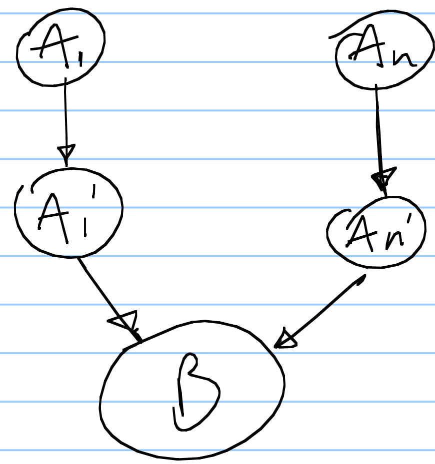
Note Title 2/23/2009

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 per part)
due Friday, 2/27 (note change in due date)!



$P(A_i' \mid A_i) =$

A_i' \ A_i	true	false
true	$1-q_i$	q_i
false	q_i	$1-q_i$

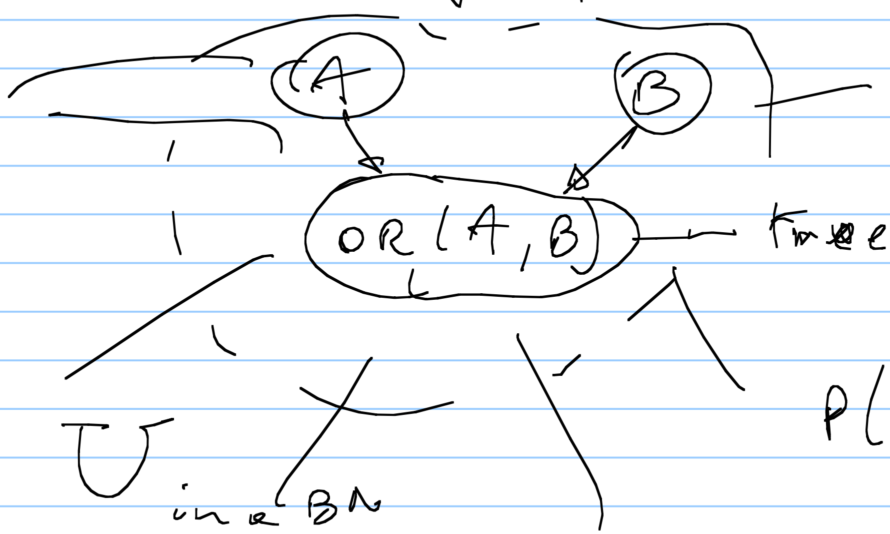
B = OR

$P(B = \text{true} \mid A_1', \ldots, A_n') = 0$ iff $A_1', \ldots A_n'$ are all false

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



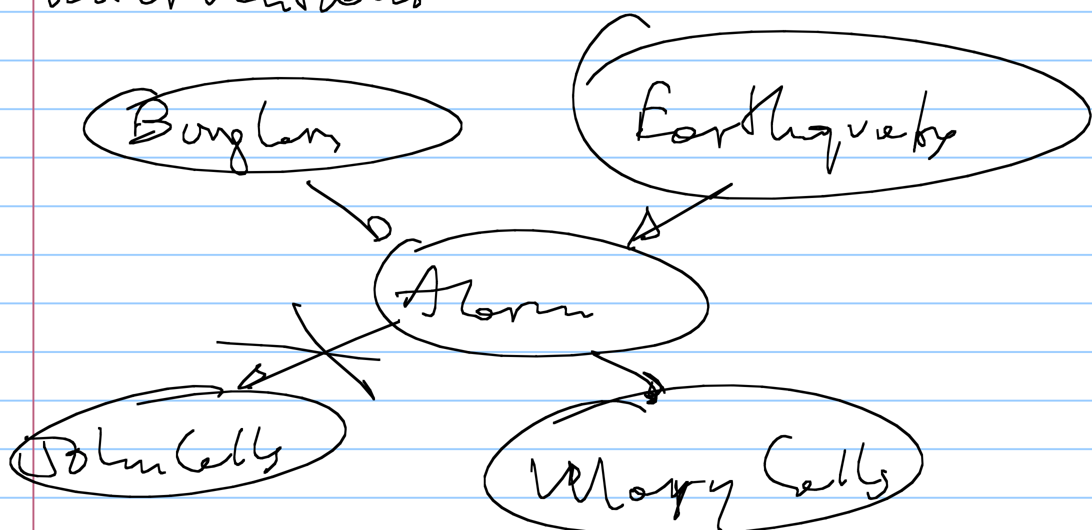
OR(A,B)	B t, A t	B f, A t	B t, A f	B f, A f
t	1	1	1	0
f	0	0	0	1

$$P(U) = \prod_{v \in U} P(v \mid pa(v)) = \dots$$

$$= \cdots \times P(OR(A,B) \mid A,B) \times \cdots ,$$

So, the $P(U)$ is ϕ unless $P(OR(A,B) \mid A,B) \neq 0$ (in this case, unless $P(OR(A,B) \mid A,B) = 1$).

Interventions



excision semantics for causality