

BAYESIAN NETWORKS

CHAPTER 14.3

Outline

- ◇ Parameterized distributions

Compact conditional distributions

CPT grows exponentially with number of parents

CPT becomes infinite with continuous-valued parent or child

Solution: **canonical** distributions that are defined compactly

Deterministic nodes are the simplest case:

$$X = f(\text{Parents}(X)) \text{ for some function } f$$

E.g., Boolean functions

$$\text{NorthAmerican} \Leftrightarrow \text{Canadian} \vee \text{US} \vee \text{Mexican}$$

E.g., numerical relationships among continuous variables (parents=car prices, child=bargain price, $f=\min(\text{car prices})$)