Inference in Temporal Models

✔ **3/3** 得分（100%)

测验通过！
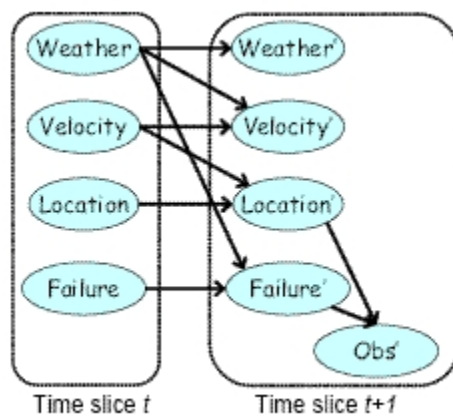
返回第 4 周课程

✔ 1 / 1 分

1.

Unrolling DBNs. Which independencies hold in the unrolled network for the following 2-TBN for all t ?

Time slice t Time slice $t+1$

(Hint: it may be helpful to draw the unrolled DBN for several slices)

☑ $(Weather^t \perp Velocity^t \mid Weather^{(t-1)}, Obs^{1...t})$

正确
$Weather^t$ is blocked by $Weather^{t-1}$ for all t .

☐ $(Failure_t \perp Velocity_t \mid Obs_{1...t})$

未选择的是正确的

☐ $(Failure^t \perp Location^t \mid Obs^{1...t})$

未选择的是正确的

☐ $(Weather^t \perp Location^t \mid Velocity^t, Obs^{1...t})$

未选择的是正确的

☐ None of these

未选择的是正确的

☐ $(Weather^t \perp Velocity^t \mid Obs^{1...t})$

未选择的是正确的

✔ 1 / 1 分

2.

*Limitations of Inference in DBNs. What makes inference in DBNs difficult?

☐ Standard clique tree inference cannot be applied to a DBN

未选择的是正确的

☑ As t grows large, we generally lose independencies of the form $(X^{(t)} \perp Y^{(t)} \mid Z^{(t)})$

正确

This is true, and this phenomenon is known as entanglement.

☐ As t grows large, we generally lose all independencies in the ground network

未选择的是正确的

☑ In many networks, maintaining an exact belief state over the variables requires a full joint distribution over all variables in each time slice

正确
This is true because we generally lose independencies relating variables in the belief state due to entanglement. Hence, the only way to maintain an exact belief state often requires a full joint distribution.

✔ 1 / 1 分

3.
Entanglement in DBNs. Which of the following are consequences of entanglement in Dynamic Bayesian Networks over discrete variables?

☐ The size of an exact representation of the belief state is quadratic in the number of variables.

未选择的是正确的

☑ The size of an exact representation of the belief state is exponentially large in the number of variables.

正确
This is true, since the only way to represent the belief state exactly is to maintain a full joint distribution.

☐ All variables in the unrolled DBN become correlated.

未选择的是正确的

☐ The belief state factorizes in the unrolled DBN if the belief state factorizes in the 2-TBN for the DBN.

未选择的是正确的