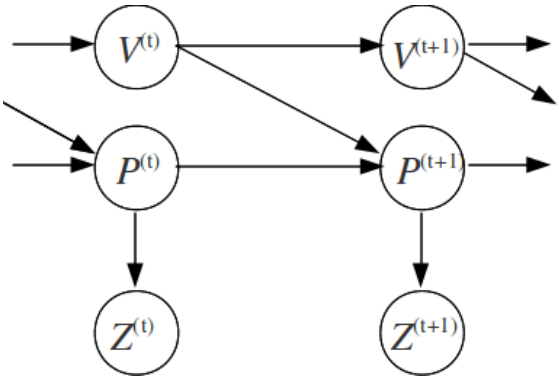
Information

Linear Gaussian Models and the Kalman Filter

Consider the probabilistic model of a bicycle driving along a 1-D road that we discussed in class, with two hidden state variables P and V (position and velocity/speed) and the observable variable Z (GPS), and the following dependency structure. Assume all variables are real-valued, and we parameterise this model as a Kalman Filter.



Information

Which of the following statements are correct?

Frage 37

Richtig

Erreichte Punkte 1,00 von 1,00

With this model structure, we cannot model a GPS sensor whose precision changes with the speed of motion

- (●) Wahr ✓
- ( ) Falsch

Die richtige Antwort ist 'Wahr'.

Frage 38

Richtig

Erreichte Punkte 1,00 von 1,00

If $V^{(t+1)}$ also depended on $P^{(t)}$, the $\mathbf{A}$ matrix would need an additional column

- Wahr
- Falsch ✓

Die richtige Antwort ist 'Falsch'.

Frage 39

Richtig

Erreichte Punkte 1,00 von 1,00

The coefficient matrix $\mathbf{A}$ can be used to encode certain assumptions about the expected precision of the GPS sensor

- Wahr
- Falsch ✓

Die richtige Antwort ist 'Falsch'.

Frage 40

Richtig

Erreichte Punkte 1,00 von 1,00

If $V^{(t+1)}$ also depended on $P^{(t)}$, the size of the $\mathbf{A}$ matrix would double

- Wahr
- Falsch ✓

Die richtige Antwort ist 'Falsch'.

Frage 41

Richtig

Erreichte Punkte 1,00 von 1,00

If the bicycle speeds up over a long time, the $\mathbf{A}$ matrix will change

- Wahr
- Falsch ✓

Die richtige Antwort ist 'Falsch'.