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Data Mining and Machine Learning

Quiz 3, II Semester, 2023–2024

16 April, 2024

In a nuclear power station, an alarm is triggered when a temperature gauge exceeds a given threshold. The gauge measures the temperature of the core of the reactor. Consider the boolean variables A (alarm sounds), F_A (alarm is faulty), and F_G (gauge is faulty) along with multivalued variables G (gauge reading) and T (actual core temperature).

1. Draw a Bayesian network for this scenario, given that the gauge is more likely to fail when the core temperature gets too high. Explain the structure of your network.

2. Suppose G and T each take just two values, normal and high. Assume that the gauge gives the correct temperature with probability x when it is working and with probability y when it is faulty. Describe the conditional probability table for G .
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