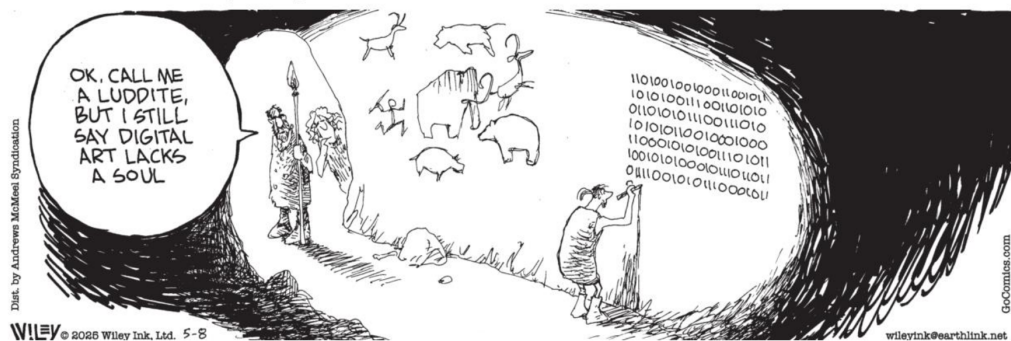


CSCI 3202

Lecture 16

October 1, 2025

NON SEQUITUR: By Wiley Miller



Non Sequitur by Wiley Miller. <https://www.gocomics.com/nonsequitur>

Announcements

- HW #5 released today
 - Due on Friday, October 10
 - Look through the HW before the Midterm
 - Some material in HW will be on the Midterm
- Quiz #6 on Friday
 - Enumeration
 - Solve a network
 - Causal and diagnostic networks
- Midterm on Wed, October 8, 2024 in class

Bayesian Networks

- How can we add a probability to our distribution then sum it out?

$$\begin{aligned}
 \text{WTS: } P(A, B) &= \sum_c P(A, B | c) \cdot P(c) \\
 P(A, B | c) &= \frac{P(A, B, c)}{P(c)} \quad \text{JOINT DIST} \\
 \Rightarrow P(A, B, c) &= P(A, B | c) \cdot P(c) \\
 P(A, B) &= \sum_c P(A, B, c) \\
 \text{so } P(A, B) &= \sum_c P(A, B | c) \cdot P(c) \\
 &= \sum_c P(A, B | c) \cdot P(c) \quad \text{COND DIST}
 \end{aligned}$$

- Solving a Bayes Network
 - We begin with a joint distribution containing all of the variables in model
 - Define the conditional probability we want as our result in terms of this joint distribution
 - We "sum over" variables we don't want in the final
 - Plug in the values from your CPTs and calculate a final result
 - Your final result should be a numerical probability
- [Bayes Nets Part II Annotated.pdf](#)

Upcoming

- Quiz #6 on Friday
- Midterm on Wed, October 8, 2024 in class
 - Review on Mon, October 6