

- Introduction
- ▼ 1. Probability and Inference

Introduction to Probability (Week 1)

Exercises due Sep 21, 2016 at 21:00 UTC

Probability Spaces and Events (Week

Exercises due Sep 21, 2016 at 21:00 UTC

Random Variables (Week 1)

Exercises due Sep 21, 2016 at 21:00 UTC

Jointly Distributed Random Variables (Week 2)

Exercises due Sep 28, 2016 at 21:00 UTC

Conditioning on Events (Week 2)

Exercises due Sep 28, 2016 at 21:00 UTC

Homework 1 (Week 2)

Homework due Sep 28, 2016 at 21:00 UTC

Inference with Bayes' Theorem for Random Variables (Week 3)

Exercises due Oct 05, 2016 at 21:00 UTC

Independence Structure (Week 3)

Exercises due Oct 05, 2016 at 21:00 UTC

Homework 2 (Week 3)

1. Probability and Inference > Inference with Bayes' Theorem for Random Variables (Week 3) > Exercise: The Product Rule for Random Variables - Medical Diagnosis Revisited

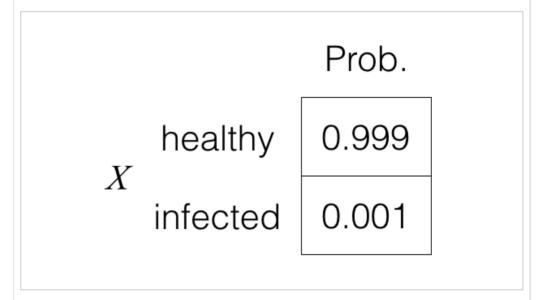
■ Bookmark

Exercise: The Product Rule for Random Variables - Medical Diagnosis Revisited

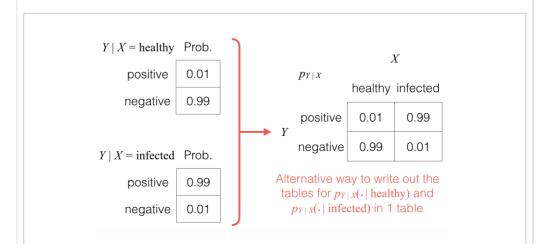
(4 points possible)

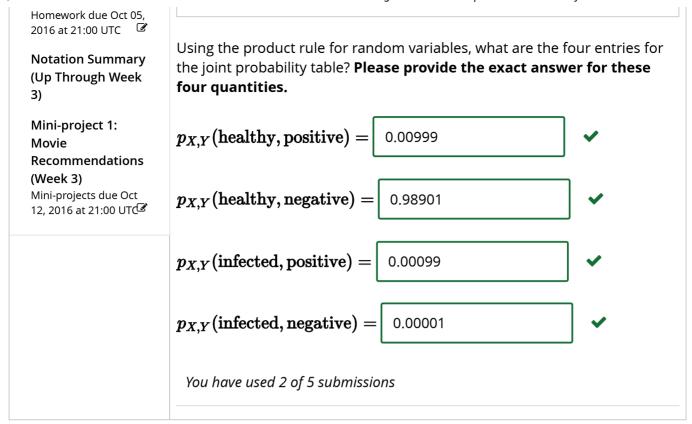
Let's revisit the medical diagnosis problem we saw earlier. We now use random variables to construct a joint probability table.

Let random variable X represent the patient's condition — whether "healthy" or "infected", with the following distribution for X:



Meanwhile, the test outcome \boldsymbol{Y} for whether the patient is infected is either "positive" (for the disease) or "negative". As before, the test is 99% accurate, which means that the conditional probability table for \boldsymbol{Y} given \boldsymbol{X} is as follows (note that we also show how to write things out as a single table):





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