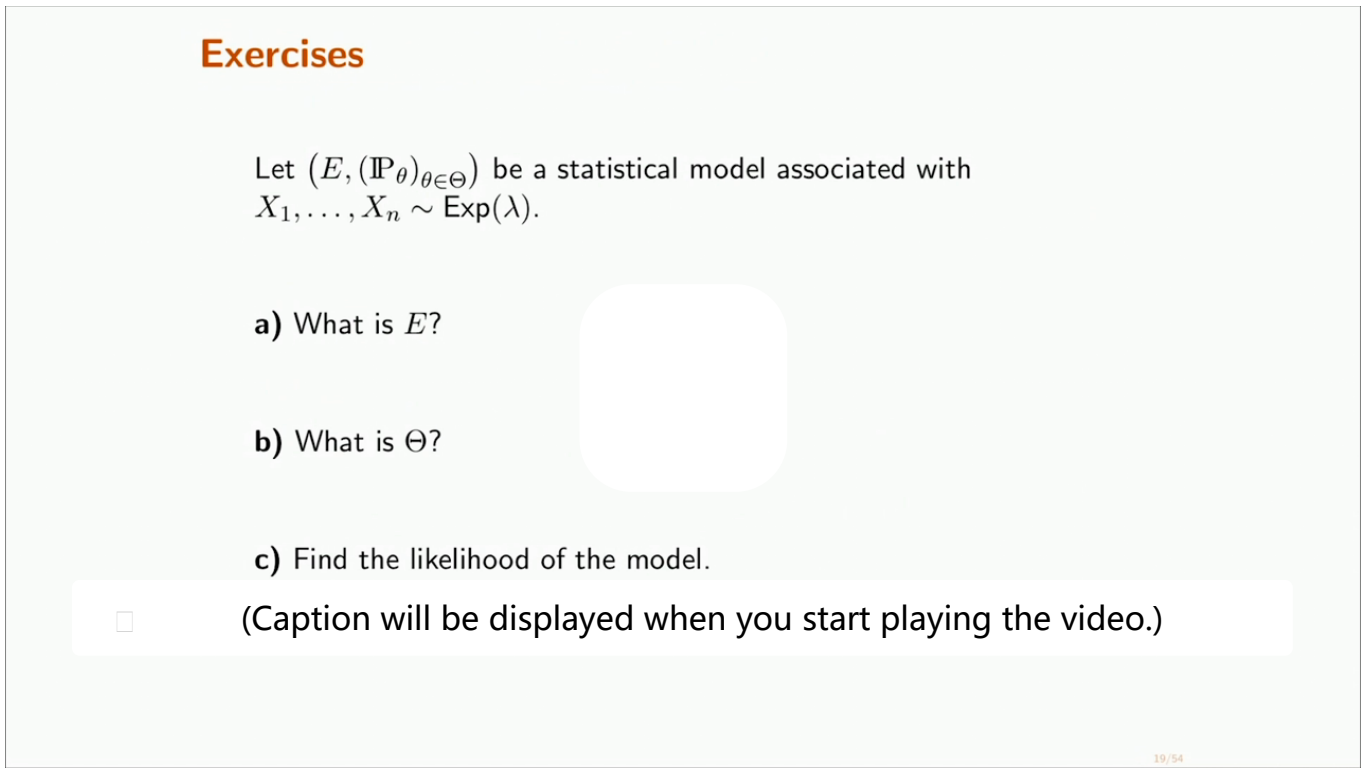
3. Likelihood of an Exponential Distribution
Likelihood of an Exponential Distribution



Start of transcript. Skip to the end.

OK, so now let's do it for the--

sorry, let's do it for the exponential distribution.

What is E?

Yes.

Positive numbers.

Yeah, so it's 0, infinity.

Or I mean, I could put in a 0 or not, but it's 0, infinity.

What is theta?

视频
下载视频文件

字幕
下载 SubRip (.srt) file
下载 Text (.txt) file

Product of Indicators

1/1 point (graded)
Rewrite the product $\mathbf{1}(x_1 \leq 5)\mathbf{1}(x_2 \leq 5)$ as a single indicator function. That is, find $f(x_1, x_2)$ in the following equation:

$$\mathbf{1}(x_1 \leq 5)\mathbf{1}(x_2 \leq 5) = \mathbf{1}(f(x_1, x_2) \leq 5).$$

(Choose all that apply.)

- [ ] $f(x_1, x_2) = x_1 x_2$
- [ ] $f(x_1, x_2) = \dfrac{x_1 + x_2}{2}$
- [ ] $f(x_1, x_2) = \text{sign}(x_1)\,\text{sign}(x_2)$
- [x] $f(x_1, x_2) = \max(x_1, x_2)$ □
- [ ] $f(x_1, x_2) = \min(x_1, x_2)$

□

Solution:

We need to find $f(x_1, x_2)$ such that

$$f(x_1, x_2) \leq 5 \iff x_1 \leq 5 \text{ and } x_2 \leq 5$$

We go through the choices in order. We leave it to you to find counter examples:

1. $x_1, x_2 \leq 5$ does not imply $x_1 x_2 \leq 5$;
2. $\dfrac{x_1 + x_2}{2} \leq 5$ does not imply $x_1, x_2 \leq 5$;
3. $\text{sign}(x_1)\,\text{sign}(x_2) \leq 5$ for all $x_1, x_2,$ and in particular does not imply $x_1, x_2 \leq 5$;
4. $\max(x_1, x_2) \leq 5$ if and only if both $x_1, x_2 \leq 5$, so this is a valid choice for $f(x_1, x_2)$;
5. $\min(x_1, x_2) \leq 5$ implies one of x_1, x_2 to be at most 5 but not necessarily both.

提交 你已经尝试了1次（总共可以尝试2次）

Answers are displayed within the problem

讨论

显示讨论

主题： Unit 3 Methods of Estimation:Lecture 9: Introduction to Maximum Likelihood Estimation / 3. Likelihood of an Exponential Distribution