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Course Pro

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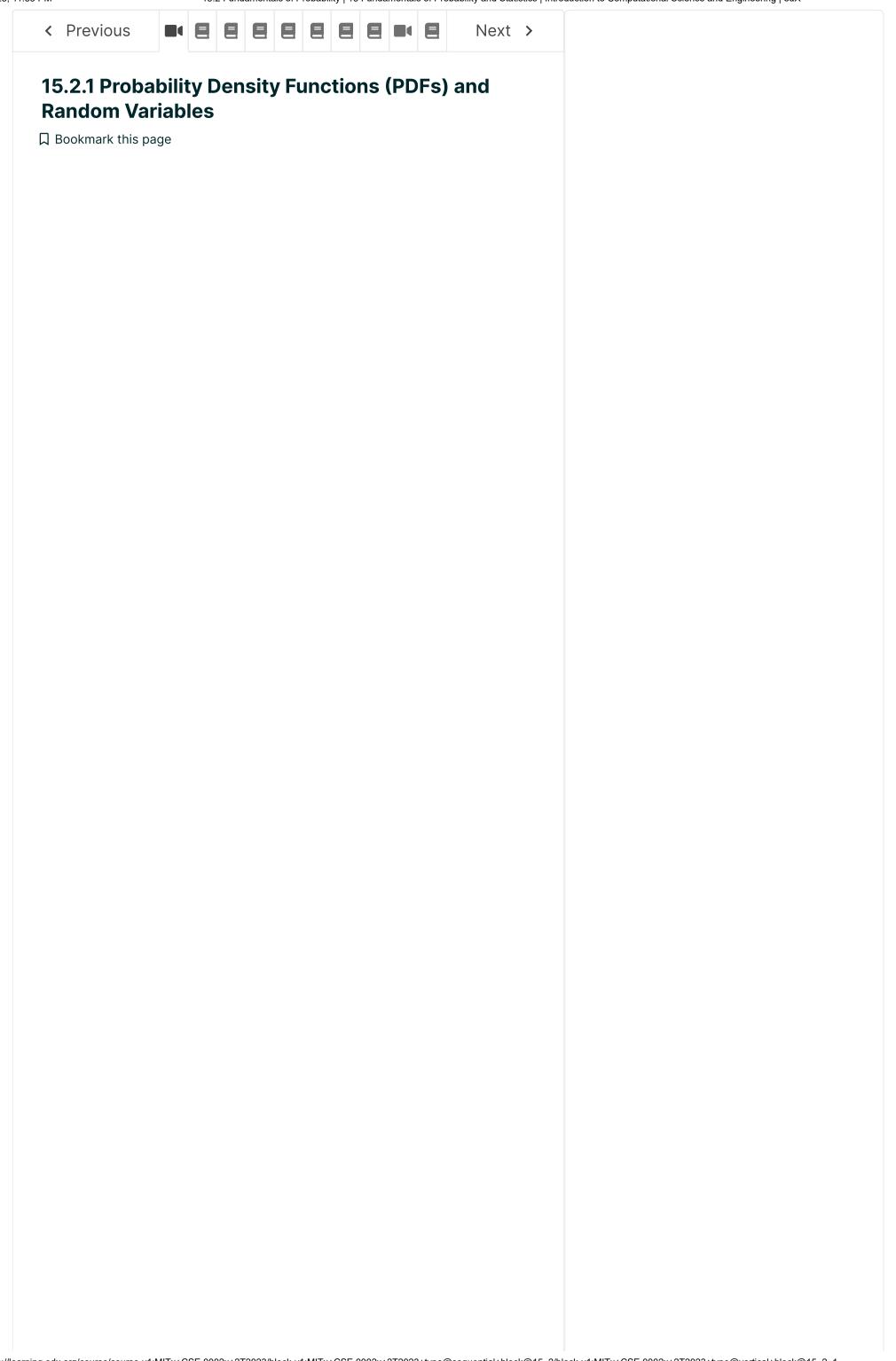
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Discussion

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Discussions

A variable whose value depends on the outcome of a random phenomenon is known as a $random\ variable$. In the projectile example, the input parameters V_0 and θ_0 are random variables because we have said they have randomness. And, as a result, the impact location x_f is also a random variable (since it depends on these random variables).

A typical notation used for a random variable is capital letters. For example, the impact location would be referred to as X_f and the meaning is that X_f does not have a precise value but rather may take on a range of values. We say that X_f has a distribution of values.

A common way to describe the distribution of a random variable is through its probability density function (or PDF for short). Let the PDF of a variable X be f(x) then the probability that $x - \mathrm{d}x/2 < X < x + \mathrm{d}x/2$ is equal to $f(x)\,\mathrm{d}x$, i.e.,

$$P\left(x - \frac{\mathrm{d}x}{2} < X < x + \frac{\mathrm{d}x}{2}\right) = f\left(x\right) \, \mathrm{d}x$$

Thus, the PDF is a measure of how likely the value of a

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random variable is. From this definition of the PDF, the $\hat{c}(x)$ illity that $X \leq x$ is related to f(x) through the following integral,

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$$P\left(X \leq x
ight) = \int_{-\infty}^{x} f(\xi) \; \mathrm{d} \xi$$

 $\langle x \rangle = \int_{-\infty}^{x} f(\xi) d\xi$

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OpWhen we consider all possible values, i.e. $x \to +\infty$, then the Capeobability $P(X \le +\infty)$ must be one. This means that the Neintegral of f(x) over the entire real numbers must be one,

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 $\int_{-\infty}^{+\infty} f(\xi) \, \mathrm{d}\xi = 1$

(15.4)

(15.3)

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Accessibility Policy of the probability that X lies between $\frac{Trademark\ Policy}{x_a}$ and x_b . That can be found as follows, Sitemap

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(15.5)

Connect

The following video discusses PDFs and how to use the Idea Hub matplotlib hist command to plot them from an array of data. Contact Us

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And so X would be a random variable.