Seaborn

-Aditya Dhandi

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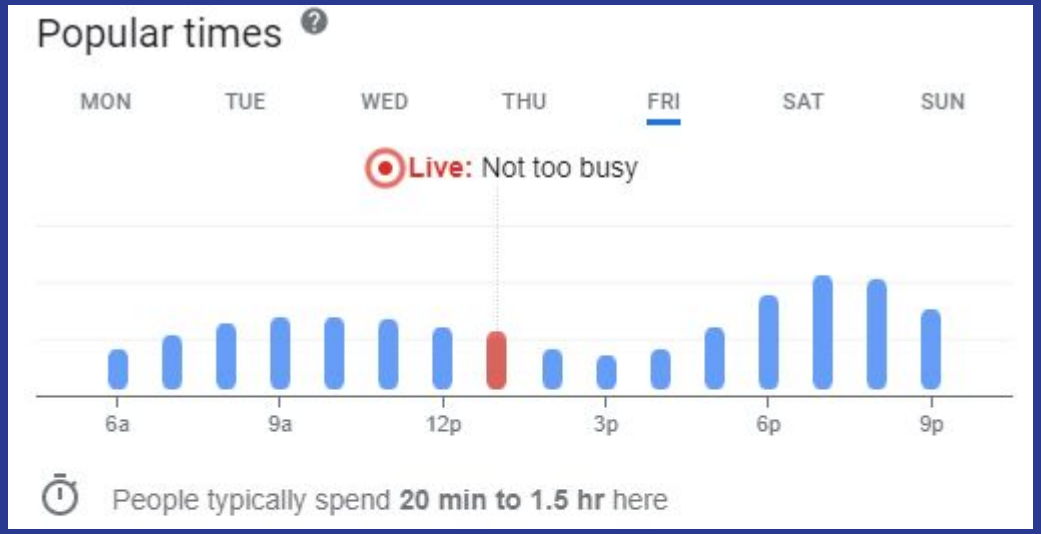
Distribution Plot

Uses of Distribution Plot



Uses of Distribution Plot

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- Summarizing large data sets graphically
- Helps in identifying trends in a set of data
- To see the symmetry and skewness in data
- Seeing whether a process change has occurred from one time period to another
- Verification of similar distribution

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Kernel Density Estimate (KDE)

What Is a Kernel density estimation (KDE)?

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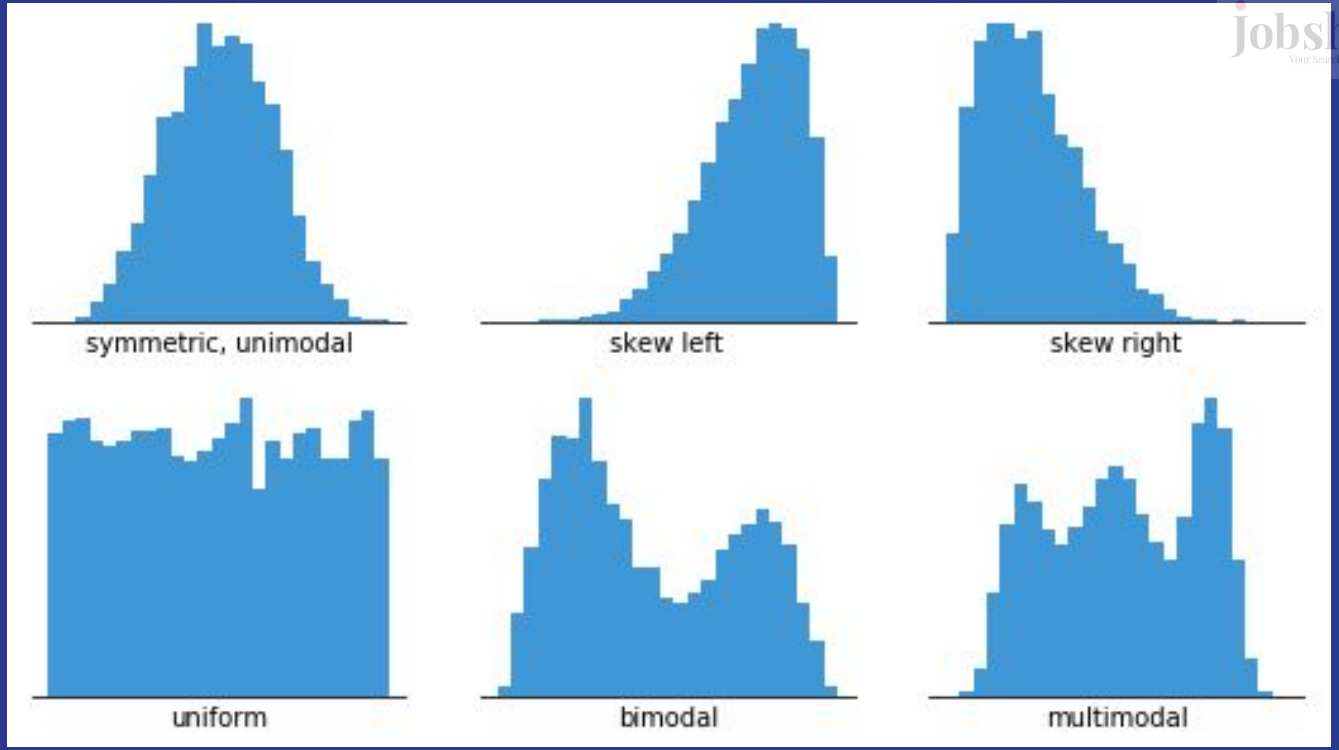
Kernel density estimation (KDE) is a non-parametric method for estimating the probability density function of a given random variable.

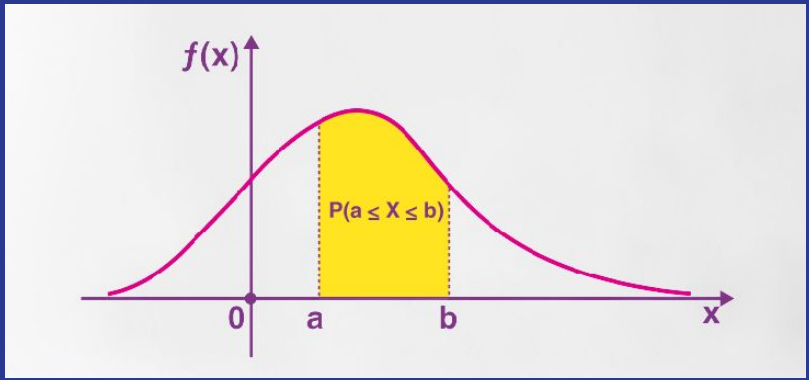
A **nonparametric method** is a mathematical inference method that does not consider the underlying assumptions on the shape of the probability distribution of the population.

Example: Histogram


symmetric, unimodal
skew left
skew right
uniform
bimodal
multimodal

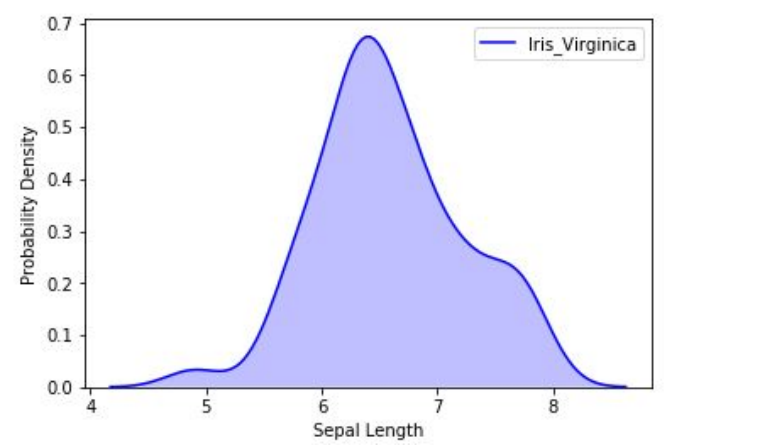
The Probability Density Function(PDF)

The Probability Density Function(PDF) defines the probability function representing the density of a continuous random variable lying between a specific range of values. In other words, the probability density function produces the likelihood of values of the continuous random variable

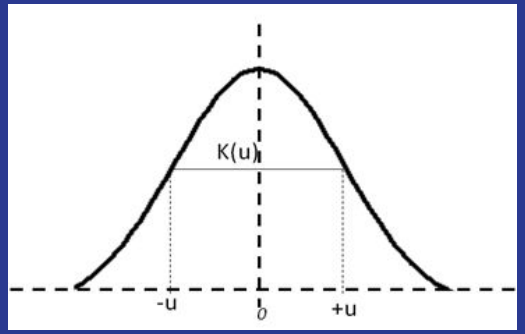


What Is a Kernel density estimation (KDE) Plot?

Kernel density estimate (KDE) plot is a method for visualizing the distribution of observations in a dataset. KDE represents the data using a continuous probability density curve in one or more dimensions.



Kernel is simply a function which satisfies following three properties as mentioned below.



1. It must be symmetrical.
2. Area under the curve of the function must be equal to one.
3. Can not be negative

$$\int_{-\infty}^{+\infty} K(u)du = 1$$

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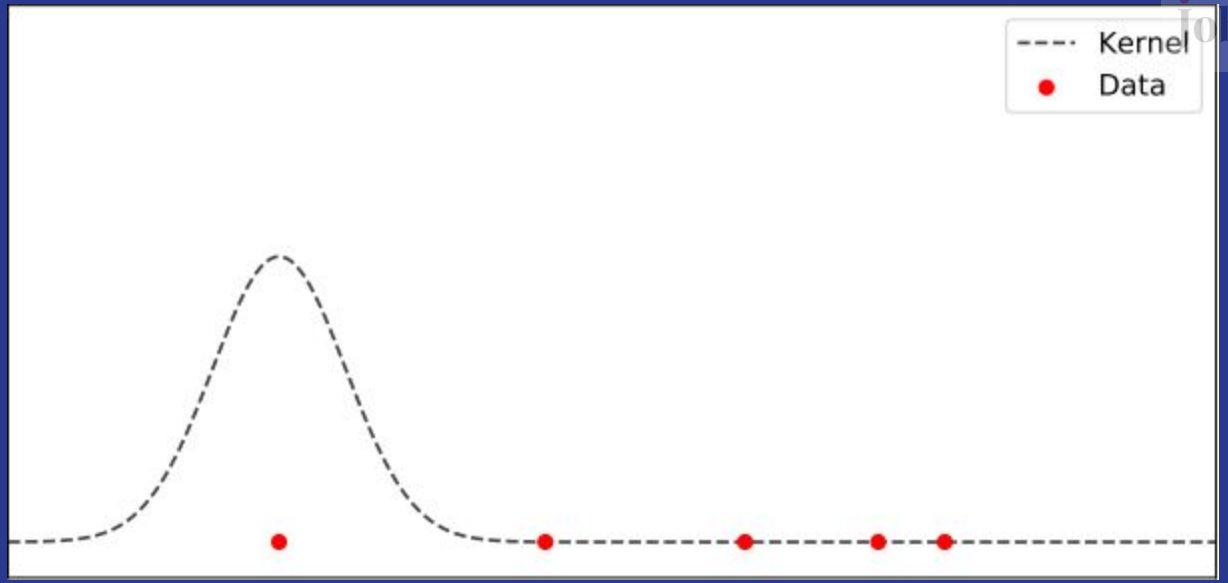
$$K(x) = \frac{1}{h\sqrt{2\pi}} e^{-0.5\left(\frac{x-xi}{h}\right)^2}$$


Kernel
Data

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$$\hat{f}(x) = \frac{1}{N} \sum_{i=1}^{N} K(x - x_i).$$

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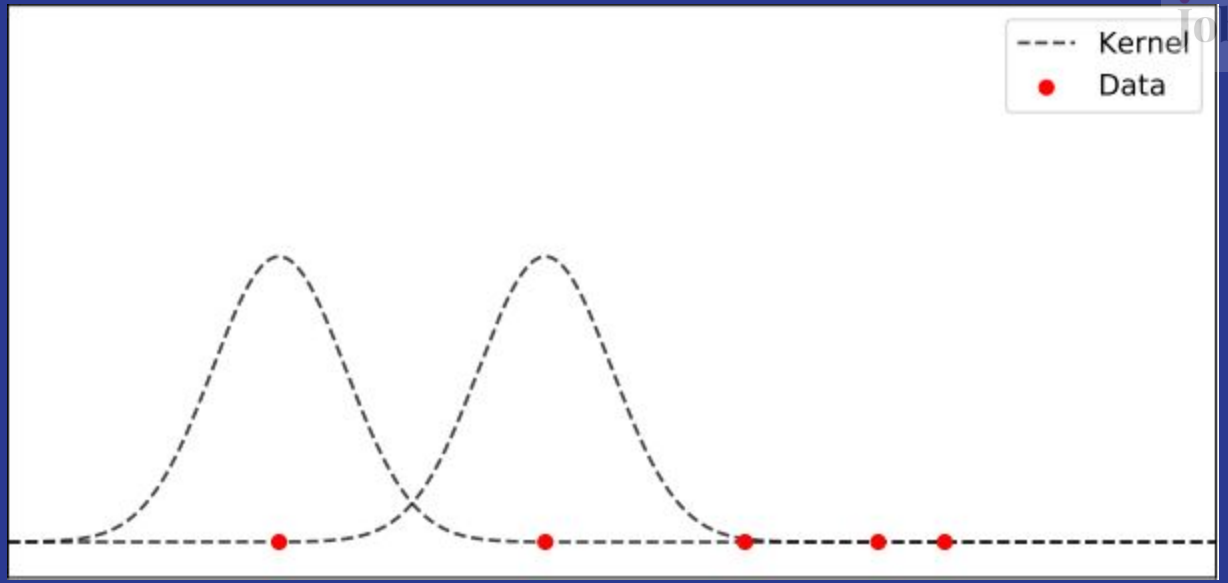
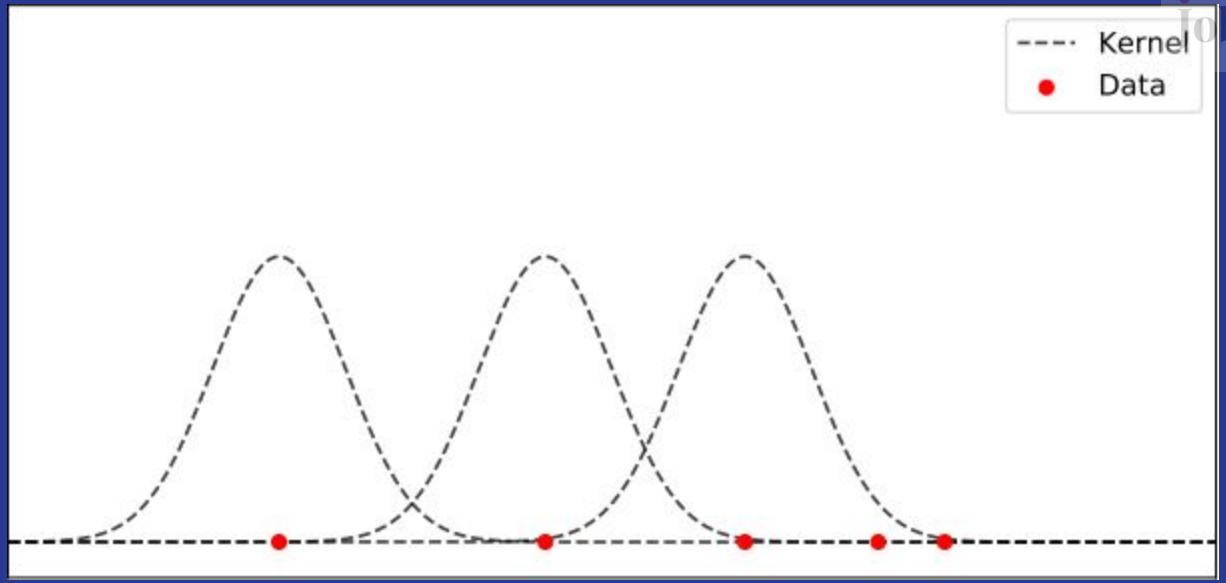
$$\hat{f}(x) = \frac{1}{Nh} \sum_{i=1}^{N} K\left(\frac{x - x_i}{h}\right).$$


Kernel
Data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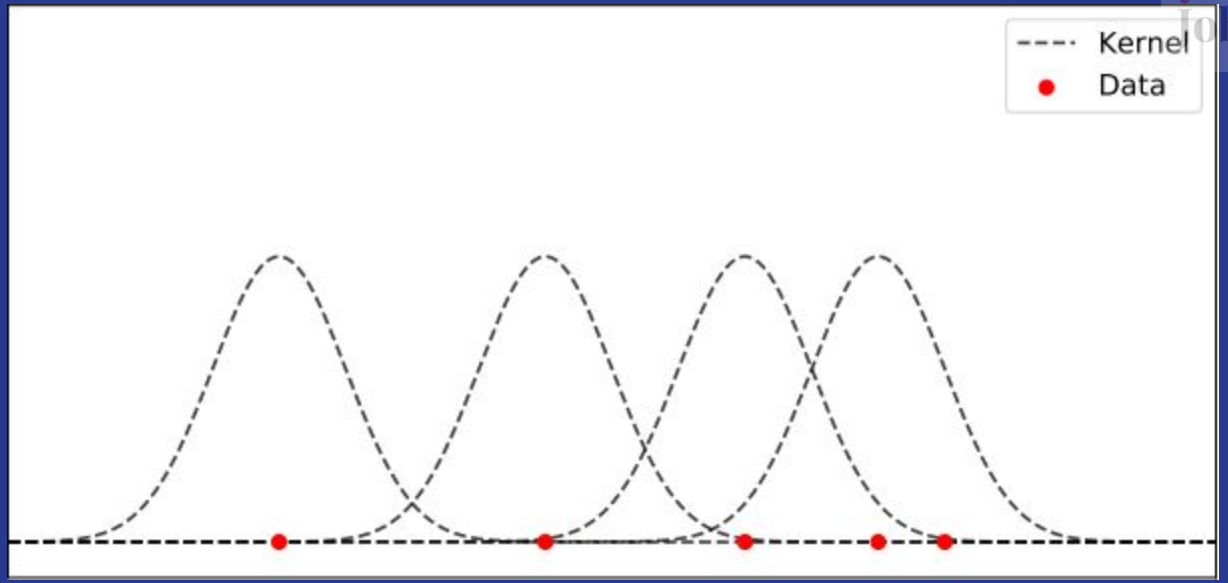
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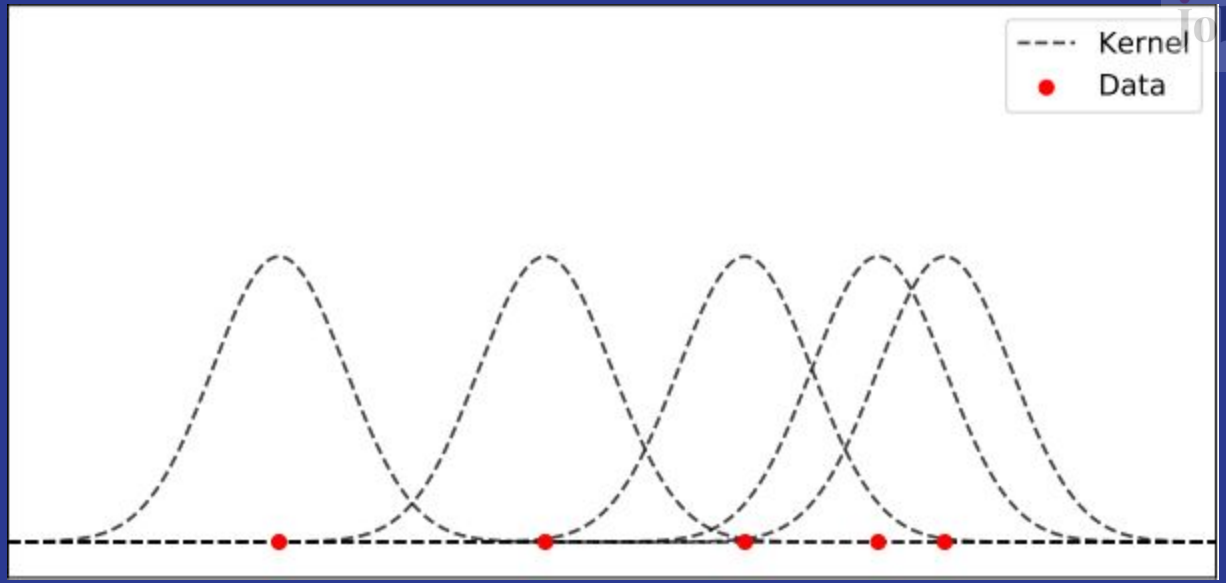
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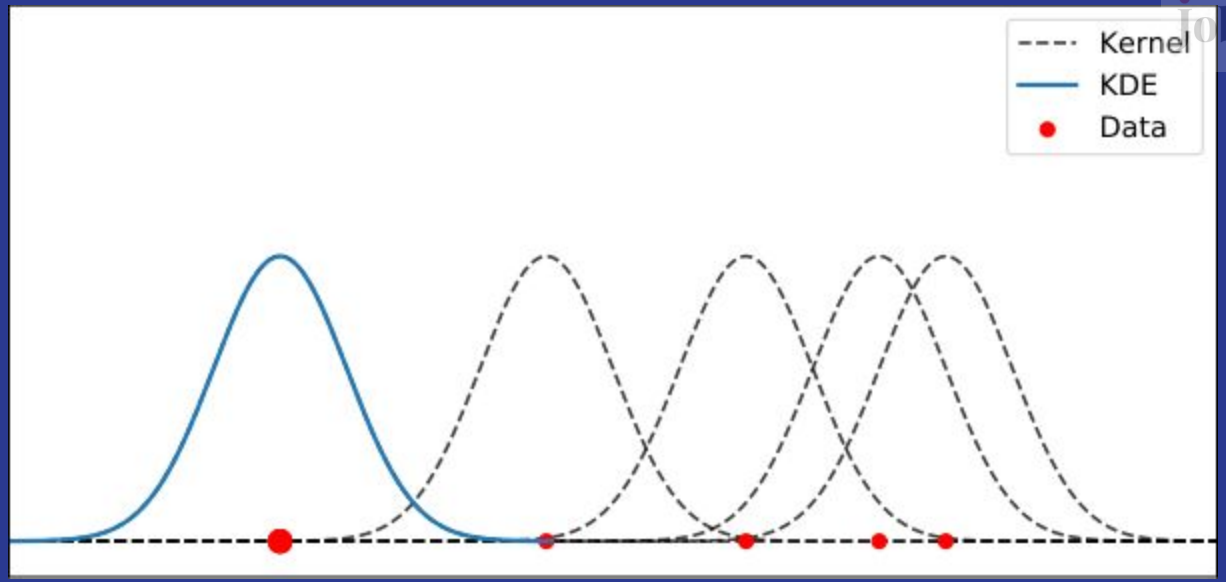
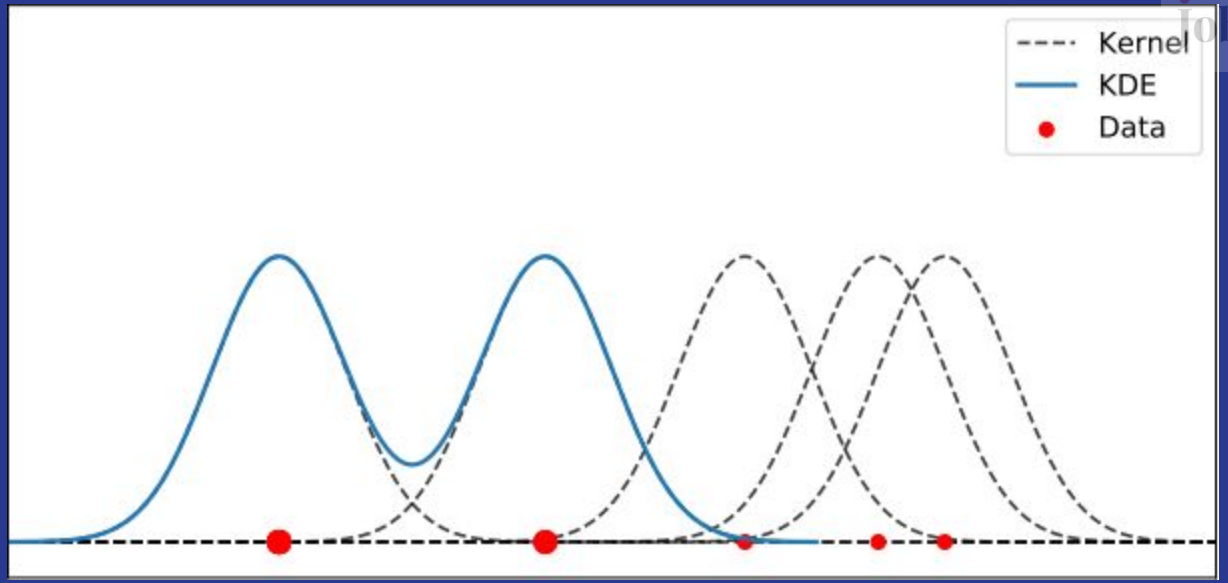

Kernel
KDE
Data


Kernel
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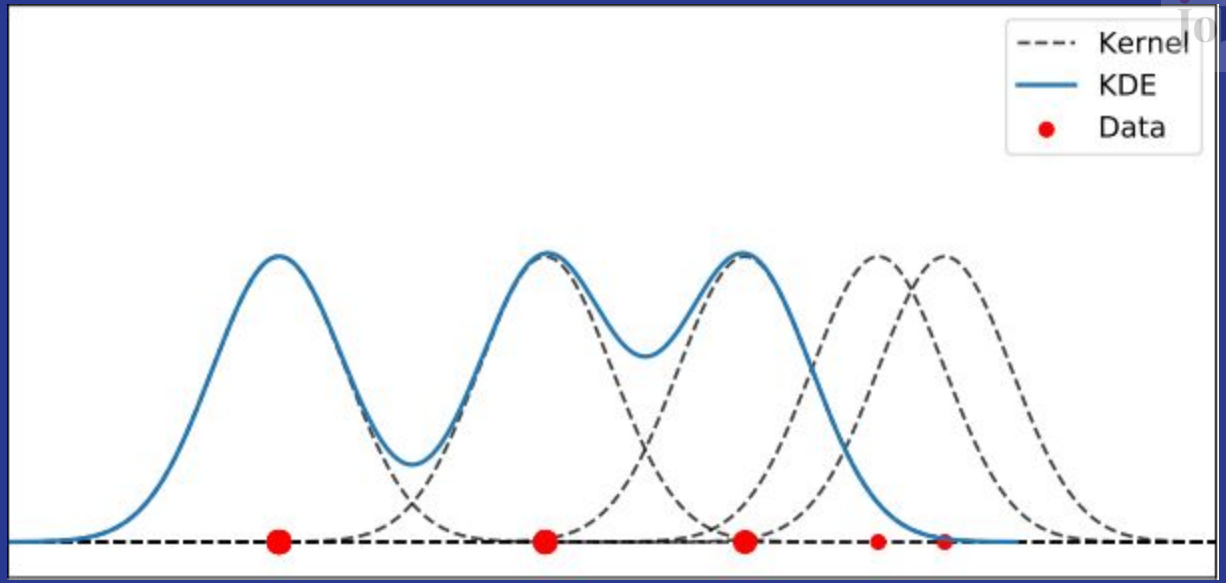
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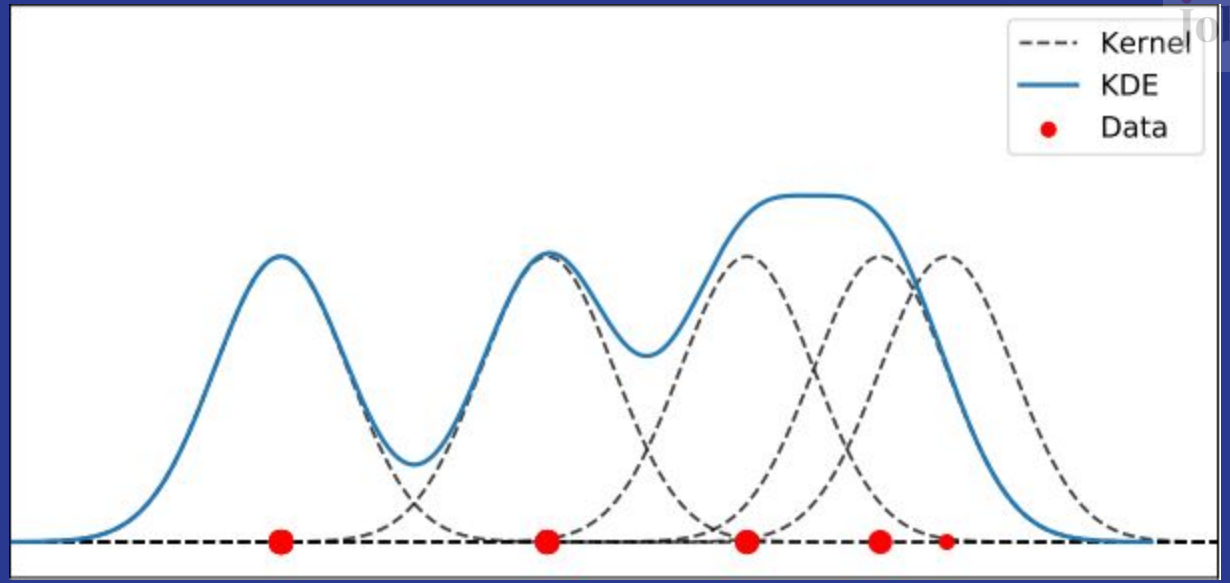
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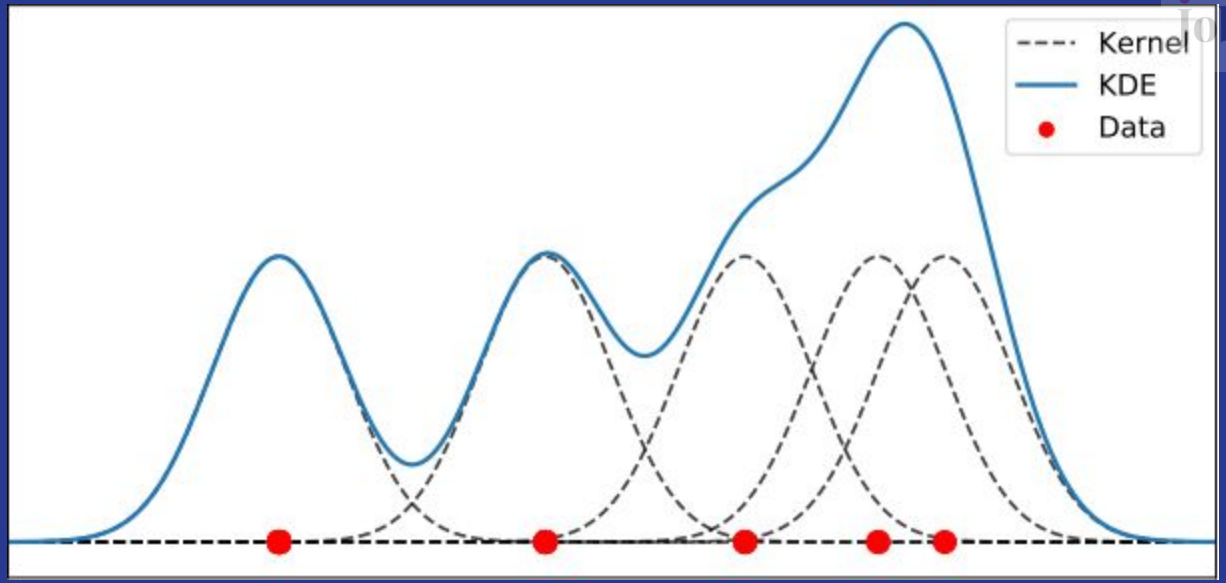
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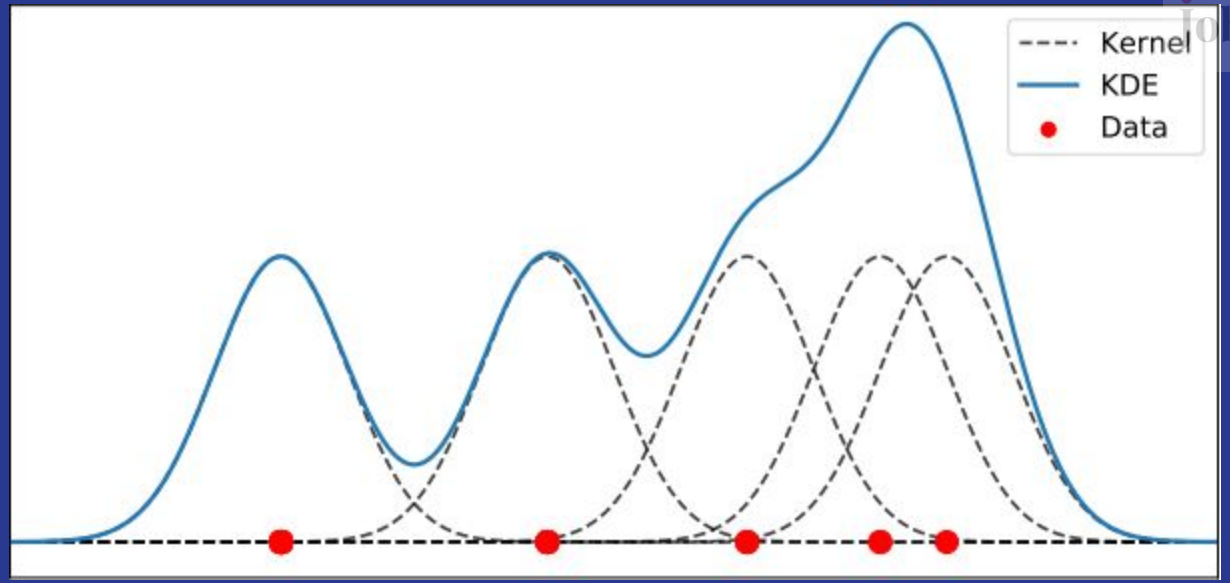
KDE
Data



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