Bike Sharing Demand

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CONTENTS:

CHAPTER

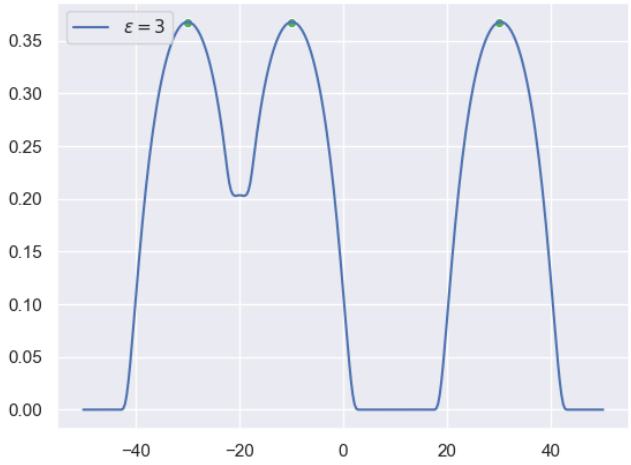
ONE

UTILITIES

bike_sharing_demand.utilities.**bump_dummies**(*dummy_variables_list: List[int]*, *radius: float = 0*) → List[float]

Apply *RBF* bump functions on list of dummy variables.

A bump function is applied for every non-zero entry (taking its index as the mean), the results are summed.



Parameters

- **dummy_variables_list** – List of dummy variables.
- **radius** – Radius parameter ϵ of the bump functions.

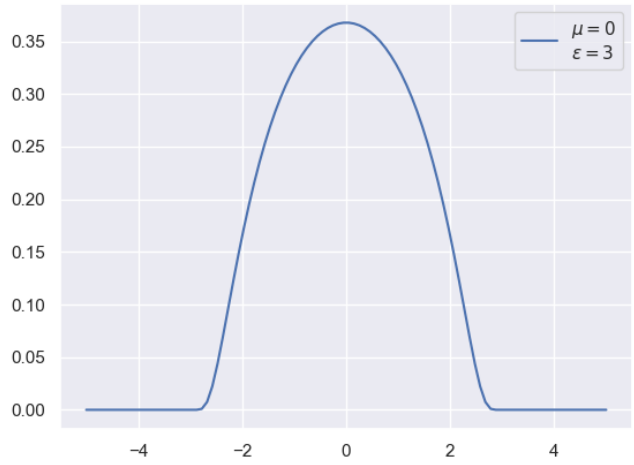
Returns Transformed list.

Return type List[float]

bike_sharing_demand.utilities.**bump_function**(*x: float*, *mean: float = 0*, *radius: float = 1*) → float

Return image of an *RBF* bump function with given mean and radius.

$$\phi_{\mu,\epsilon}(x) = \begin{cases} \exp\left(-\frac{1}{1-\epsilon(x-\mu)^2}\right) & \text{for } x < \epsilon + \mu \\ 0 & \text{otherwise} \end{cases}$$



Parameters

- **x** – Argument.
- **mean** – Mean parameter μ of the bump function.
- **radius** – Radius parameter ϵ of the bump function.

Returns Image of the bump function for provided argument and parameters.

Return type `float`

References

- https://en.wikipedia.org/wiki/Bump_function
- https://en.wikipedia.org/wiki/Radial_basis_function

`bike_sharing_demand.utilities.`**`bump_function_distance`**(*distance*, *radius: float = 1*)

Intermediate step for memoization.

Parameters

- **distance** – Distance from the mean of the bump function.
- **radius** – Radius parameter ϵ of the bump function.

Returns Image of the bump function for provided argument and parameters.

Return type `float`

CHAPTER

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