

# Sine Regression

Module:

```
deeprai.models.regression.sine_regression
```

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Class: `SineRegression`

A class representation of the sine regression model.

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1. Initializer: `__init__(self)`

Description:

Initializes the `SineRegression` class.

Attributes:

- **fitted\_vals** (`list`): A list to store the results after the model has been fitted. These values represent the parameters of the sine equation.

Example:

```
from deeprai.models.regression import SineRegression

model = SineRegression()
```

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2. Method: `fit(self, x_vals, y_vals)`

Description:

Fit the model to the given `x_vals` and `y_vals` using sine regression.

## Parameters:

- **x\_vals** (`list` or `np.ndarray`): The input values or features.
- **y\_vals** (`list` or `np.ndarray`): The output values or labels.

## Returns:

- `list`: Parameters of the sine equation, which includes amplitude, frequency, phase shift, and vertical shift.

## Example:

```
model.fit(x_vals=[1, 2, 3], y_vals=[2, 1.5, 2.5])
```

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## 3. Method: `run(self, x_val)`

### Description:

Use the previously fitted model to predict the output for a given `x_val` based on the sine equation.

### Parameters:

- **x\_val** (`float`): The input value for which the prediction is desired.

### Returns:

- `float`: Predicted value based on the sine regression equation.

## Example:

```
predicted_val = model.run(4)
print(predicted_val)
```

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