svm

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```python
[2]: import numpy as np
     # Dataset: [Car Age, Mileage, Fuel Type]
     X = np.array([
         [3, 22000, 1],
         [6, 75000, 0],
         [2, 14000, 1],
         [8, 85000, 0],
         [4, 50000, 1]
     ], dtype=float)

     # Target: Price Category (0 or 1)
     y = np.array([1, 0, 1, 0, 1])
```

```python
[3]: X_svm = X
     y_svm = np.where(y == 0, -1, 1)

     w = np.zeros(X_svm.shape[1])
     b = 0
     alpha = 0.000000001
     epochs = 1000

     for _ in range(epochs):
         for i in range(len(X_svm)):
             x_i = X_svm[i]
             condition = y_svm[i] * (np.dot(w, x_i) + b) >= 1
             if condition:
                 w -= alpha * (2 * w)
             else:
                 w -= alpha * (2 * w - np.dot(x_i, y_svm[i]))
                 b -= alpha * y_svm[i]

     def svm_predict(x):
         return 1 if np.dot(w, x) + b >= 0 else 0

     y_pred = [svm_predict(x) for x in X_svm]
     y_true = np.where(y_svm == -1, 0, 1)
     accuracy = np.mean(y_pred == y_true)
```

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print("SVM Accuracy:", accuracy)
```

SVM Accuracy: 0.4

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