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import pandas as pd
import numpy as np
import re
import string
from sklearn.model_selection import train_test_split
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.naive_bayes import MultinomialNB
from sklearn.metrics import accuracy_score, classification_repo

# Load dataset
def load_data(file_path):
    df = pd.read_csv(file_path, encoding='latin-1')
    df = df[['v1', 'v2']]
    df.columns = ['label', 'message']
    return df

# Preprocess text
def preprocess_text(text):
    text = text.lower()
    text = re.sub(f"[{string.punctuation}]", "", text)
    text = re.sub(r"\d+", "", text)
    return text

# Train model
def train_model(X, y):
    X_train, X_test, y_train, y_test = train_test_split(X, y, t
    model = MultinomialNB()
    model.fit(X_train, y_train)

    y_pred = model.predict(X_test)
    print("Accuracy:", accuracy_score(y_test, y_pred))
    print("Classification Report:\n", classification_report(y_t

    return model

if __name__ == "__main__":
    file_path = "spam.csv"
```

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df = load_data(file_path)
df['message'] = df['message'].apply(preprocess_text)

vectorizer = TfidfVectorizer()
X = vectorizer.fit_transform(df['message'])
y = df['label'].map({'ham': 0, 'spam': 1})

model = train_model(X, y)

# Example prediction
sample_message = ["Win a free iPhone now!"]
sample_vectorized = vectorizer.transform(sample_message)
prediction = model.predict(sample_vectorized)
print("Predicted Spam (1) or Ham (0):", prediction)
```