

1. House Price Prediction

Title : House Price Prediction

Abstract :

The prediction of house prices has long been a critical problem in the real estate industry, influencing both buyers' and sellers' decisions. This study explores the use of machine learning algorithms to predict house prices based on various features such as location, size, number of rooms, amenities, and historical market trends. The research focuses on implementing several regression models, including Linear Regression, Random Forests, and Support Vector Machines (SVM), to analyze their performance in predicting house prices. The dataset used for this study includes a combination of structured features and geographic data to assess their impact on prediction accuracy. Results indicate that machine learning models significantly outperform traditional statistical methods, offering higher accuracy and more reliable predictions. The study highlights the potential of these models for aiding real estate stakeholders in making informed decisions and optimizing pricing strategies.

2. Spam Email Classifier

Title : Spam Email Classifier

Abstract :

Spam emails, also known as unsolicited or junk emails, pose significant challenges for both email users and service providers due to their potential to disrupt communication, spread malware, and waste valuable resources. This study investigates the development of an automated spam email classifier using machine learning techniques. By analyzing a dataset of labeled emails, the research explores various text classification algorithms, including Naive Bayes, Support Vector Machines (SVM), and Random Forest, to distinguish between spam and non-spam (ham) emails. Feature extraction methods such as bag-of-words, TF-IDF, and word embeddings are employed to convert email content into a numerical representation suitable for model training. Performance evaluation of the models is conducted using standard metrics such as accuracy, precision, recall, and F1-score. The results demonstrate that machine learning classifiers, particularly Naive Bayes, achieve high levels of accuracy in identifying spam emails, providing an effective solution for automated spam filtering. This study offers insights into improving email security and user experience by reducing the risk of spam-related issues.

3. Handwritten Digit Recognition

Title : Handwritten Digit Recognition

Abstract :

Handwritten digit recognition plays a vital role in various applications, including postal sorting systems, banking, and automated document processing. This study explores the development of a machine learning-based system for accurately recognizing handwritten digits using the popular MNIST dataset. The research focuses on implementing and comparing different classification algorithms such as k-Nearest Neighbors (k-NN), Support Vector Machines (SVM), and Convolutional Neural Networks (CNNs). Image pre-processing techniques, including normalization and feature scaling, are applied to enhance the quality of the input data. Performance metrics such as accuracy, precision, recall, and F1-score are used to evaluate the effectiveness of each model. The results show that Convolutional Neural Networks, due to their ability to capture spatial hierarchies in images, outperform traditional machine learning models in terms of accuracy and robustness.

4. Fake Currency Detection

Title : Fake Currency Detection

Abstract :

The Fake Currency Detection System is an innovative solution designed to combat the growing issue of counterfeit currency. Leveraging advanced image processing and machine learning techniques, this system accurately identifies and classifies genuine and counterfeit banknotes. The primary objective is to enhance financial security by providing a reliable and automated tool for detecting fake currency.

The system utilizes Convolutional Neural Networks (CNNs) for image analysis, extracting intricate patterns and features from currency images, such as watermarks, micro-printing, and holograms. Preprocessing techniques like image filtering, edge detection, and feature extraction are applied to improve detection accuracy. The model is trained on a diverse dataset comprising images of both real and counterfeit notes, enabling it to learn distinguishing characteristics.