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Prediction on Housing Price Based on Deep Learning

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Abstract : In order to study the impact of various factors on the housing price, we propose to build different prediction models based on deep learning to determine the existing data of the real estate in order to more accurately predict the housing price or its changing trend in the future. Considering that the factors which affect the housing price vary widely, the proposed prediction models include two categories. The first one is based on multiple characteristic factors of the real estate. We built Convolution Neural Network (CNN) prediction model and Long Short-Term Memory (LSTM) neural network prediction model based on deep learning, and logical regression model was implemented to make a comparison between these three models. Another prediction model is time series model. Based on deep learning, we proposed an LSTM-1 model purely regard to time series, then implementing and comparing the LSTM model and the Auto-Regressive and Moving Average (ARMA) model. In this paper, comprehensive study of the second-hand housing price in Beijing has been conducted from three aspects: crawling and analyzing, housing price predicting, and the result comparing. Ultimately the best model program was produced, which is of great significance to evaluation and prediction of the housing price in the real estate industry.

Keywords : deep learning, convolutional neural network, LSTM, housing prediction
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