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In this research, in order to clarify the influence that a floor plan has on rents, a rent forecasting model for a rental property considering a floor plan and a forecasting model not considering the floor plan are constructed, and their prediction accuracy is compared.

In addition, two methods are examined: the method using VGG 16 (neural network model using VGG 16) and the method using linear principal component analysis (linear regression model using principal component analysis) as feature conversion of the floor plan.

In addition, we try to restore the floor plan using feature quantities of the floor plan extracted by principal component analysis. In addition, in the linear regression model using principal component analysis, six dimensional numbers of 64, 128, 256, 512, 1024 and 2048 feature quantities of the floor plan are extracted, and each is combined with an attribute vector to perform linear regression By doing this, the number of dimensions of the feature quantities of the dominant floor plan is confirmed.

A neural network model using VGG 16 is a rent forecasting model that simultaneously learns a network that extracts feature quantities of 64 dimensions from a floor plan using VGG 16 and a network that predicts rents from attribute vectors.

On the other hand, the linear regression model using principal component analysis is a rent forecasting model that combines the extracted feature quantities with attribute vectors after feature extraction of the floor plan by principal component analysis.

From the experimental results, it has been confirmed that the linear regression model using principal component analysis is the most accurate, and the prediction accuracy of the rent is improved by considering the floor plan.

Moreover, it is also confirmed that the prediction accuracy is improved by extracting the feature quantities of the floor plan with 1024 dimensions and 2048 dimensions among the linear regression models using principal component analysis.

On the other hand, when looking at the prediction error according to the rent price range, it is confirmed that only the neural network model using VGG 16 has a low average value of the prediction error in all price ranges.

In addition, when the image is generated from the feature quantities of the 256-dimensional floor plan, the outer frame portion of the original floor plan can be reproduced, from which the structural portion of the floor plan can be restored each time the number of dimensions increases. It has been confirmed that the feature quantities in the figure can be restored to the extent that the input image can be identified.