Homework 1 for Pattern Recognition

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1 Introduction

We select Ping An Bank (code: sz000001) as the observation object. Firstly, we discretize the stock price into **10** equal parts, then use data from 2000 to 2018 to train a first-order Markov chain model, obtaining the transition matrix. The transition matrix and its convergence matrix are visualized in Fig. 1 and Fig. 2 , respectively. Subsequently, we use the transition matrix to predict the stock price changes in 2019. The comparison between the predicted and actual stock prices is shown in Fig. 3 .

2 Transition Matrix

Figure 1: Transition matrix (before convergence)

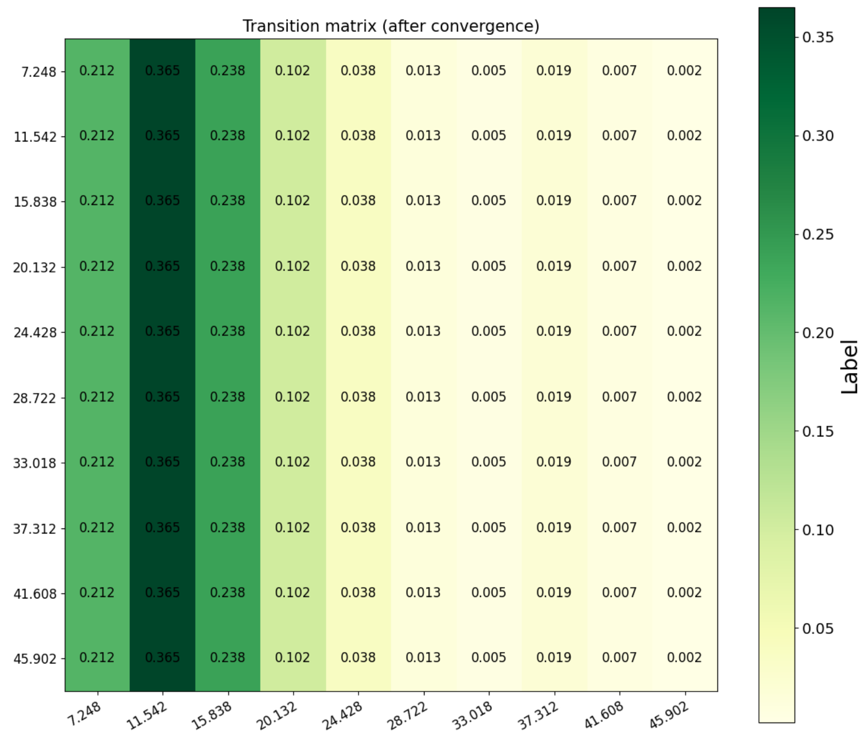

Figure 2: Transition matrix (after convergence)

3 The Temporal Variation of the Dataset

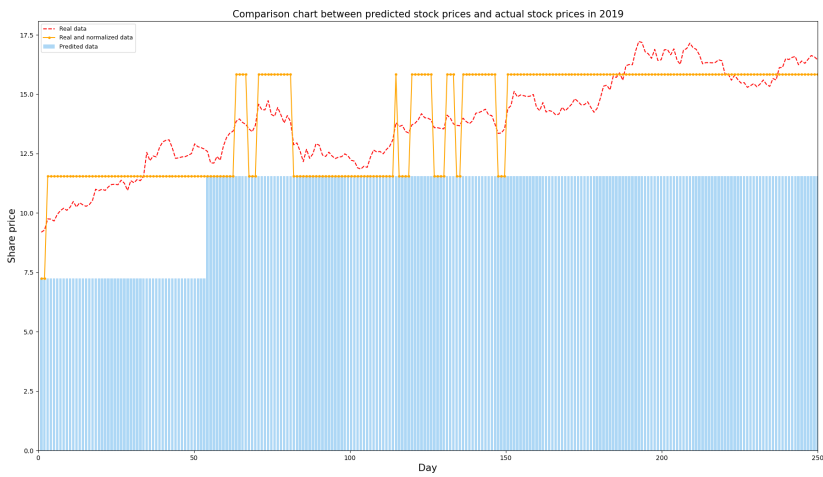

Figure 3: Comparison chart between predicted stock prices and actual stock prices in 2019