University of Electronic Science and Technology of China

Grade 2017 Bachelor Thesis Task Assignment

Examiner's School Information and Software Engineering **Examiner (Signature)**

Title Gaussian Process Prediction of Stock Price Trends

Source of subject (Choose one): 1. Scientific Research 2. Industry 3. Teaching (including Experiment) 4. Innovation and Entrepreneurship

Main Tasks:

One of the goals that investors commonly share is to predict the stock price trend given the historical data as well as current news. They are constantly searching for the strategies that give them maximized profit when trading. A simple approach to stock market would be to analyze the trend theoretically given recognizable features (e.g. DOJI). However, the real-world stock market is more complicated in that market's uncertainty exists, and certain features often occur in partial forms, indicating that theoretical trading strategies might not be sufficient enough to beat the market.

Gaussian process (GP) is a powerful instrument in machine learning field. Since Gaussian process has been widely used in many applications and shows great advantages in supervised learning problems such as regression and classification. In this project, we are interested in looking for reasonable predictions on the stock market based on Gaussian process method. And if there is extra time and students have the ability, it is better to sort out how the stock price is influenced by the relevant financial news after the relevancy of the news is measured. The primary tasks could be:

1. Gaussian process modelling
2. Stock dataset processing
3. Make predictions of the stock price and shows the visualized results
4. Latent Dirichlet implementation and relevancy quantifying and measuring (optional)
5. Performance evaluation

Expected results or objectives:

An application (simulation) for predictions of stock price trends.

Expected result form (Choose one): 1. Hardware 2. Hardware & Software **3. Software** 4. Theoretical research

Supervisor (Signature): Weidong Wang

Time (YYYY/MM/DD): From 2021/03/01 **to** 2021/05/31

Name Ubongabasi Etim **Major** Software Engineering **Student ID** 2017221501010

School School of Information and Software Engineering

Supervisor's Name and Title Dr. Weidong Wang

Location Room 407, Building of the School of Information and Software Engineering

Date: 2020/12/08

Notice: 1. This assignment should be completed by the **supervisor**, and the supervisor's name must be signed by the teacher. 2. This assignment must be given to the student **before** the thesis begins.