__init__:
引入 LinearRegression, TtestPvalue, Plot, Tools

LinearRegression:

f0: 以第 t-1 日的股價預測第 t 日的股價

$$y_t = \beta_0 + \beta_1 y_{t-1} + \varepsilon$$

$$y_t: close\ price\ at\ day\ t, y_{t-1}: close\ price\ at\ day\ t-1$$

f0m: 以第 t-1 日的指數預測第 t 日的股價

$$y_t = \beta_0 + \beta_1 x_{t-1} + \varepsilon$$

$$y_t: close\ price\ of\ a\ specific\ stock\ at\ day\ t$$

$$x_{t-1}: close\ price\ of\ index\ at\ day\ t-1$$

f0m2: 以第 t-1 日的兩個指數預測第 t 日的股價

$$y_t = \beta_0 + \beta_1 x_{1,t-1} + \beta_2 x_{2,t-1} + \varepsilon$$

$$y_t: close\ price\ of\ a\ specific\ stock\ at\ day\ t$$

$$x_{1,t-1}, x_{2,t-1}: close\ price\ of\ indices\ at\ day\ t-1$$

f1: 以昨天的股價和交易量是否增加(dummy variable)預測明天的股價

$$y_t = \beta_0 + \beta_1 y_{t-1} + \beta_2 D_1 + \varepsilon$$

$$y_t: close\ price\ at\ day\ t, y_{t-1}: close\ price\ at\ day\ t-1,$$

$$D_1 = 1: volume\ increased\ at\ day\ t-1, = 0: volume\ decreased\ at\ day\ t-1$$

f3: 以昨天價漲量增、價漲量縮、價跌量縮(dummy variables)預測明天的回報率

$$y_t = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \varepsilon$$

$$y_t: return\ at\ day\ t,$$

$$D_1: close\ price\ and\ volume\ increased\ at\ day\ t-1,$$

$$D_2: close\ price\ increased, volume\ decreased\ at\ day\ t-1,$$

$$D_3: close\ price\ decreased, volume\ increased\ at\ day\ t-1,$$

$$base\ group: close\ price\ and\ volume\ decreased\ at\ day\ t-1$$

f4: 以昨天價漲量增、價漲量縮、價跌量縮(dummy variables)預測明天的漲價的機率(dummy variable)

$$y_t = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \varepsilon$$

$$y_t = 1: close\ price\ increase, = 0: close\ prce\ decrease,$$

$$D_1: close\ price\ and\ volume\ increased\ at\ day\ t-1,$$

$$D_2: close\ price\ increased, volume\ decreased\ at\ day\ t-1,$$
$$D_3: close\ price\ decreases, volume\ increased\ at\ day\ t-1,$$
$$base\ group: close\ price\ and\ volume\ decreased\ at\ day\ t-1$$

TtestPvalue:

Ttest: It returns t-score and degree of freedom.

Pvalue: It returns one-tail and two-tail p-values.

Plot:

line: LinearRegression 中 f0, f0m, f0m2 資料視覺化

Tools:

stdnor_cdf: 回傳標準常態的累積機率分配值

logit_model: 回傳 logit model 值

pseudo_r_squared: 回傳 pseudo R^2