The only application of ML in trading strategy I can find is Kearns, Michael, and Yuriy Nevmyvaka (2013). However, since it aims at high frequency trading, this article is based on microstructure instead of traditional CAPM and Fama-French three factor model, which is not what I suppose to use. Therefore, the factor it uses in prediction should be different from mine.

Basically I cannot fully understand the technique. But first it does a future price prediction using microstructure factor, and then uses the estimates as inputs to a greedy optimization, which determines allocations and result in executions of trading.

For my project, I first plan to use typical CAPM strategy, momentum strategy and other strategies related to market anomaly to predict return separately, and then find the optimal dynamic weight of each strategies to see if we can get a higher but more stable return.

Many articles have the specification of each strategy. For example, Fama and French (JF, 1996), Daniel and Titman (JF, 1997) give the concept and strategy validation of CAPM and Fama-French strategy; Jegadeesh and Titman (JF, 1993) mentioned momentum strategy the first time, and Barroso and Santa-Clara (JFE, 2015) pointed out the time when it crashes. All of these will give a bright hint of how to predict return, and what I need to do is to weight each and combine them as an optimal mixed strategy.