

# Deep LOB Trading: Half a second, please!

Hoi Ying Wong

The Chinese University of Hong Kong

## Abstract

We introduce an expert deep-learning system for limit order book (LOB) trading for markets in which the stock tick frequency is longer than or close to 0.5 seconds, such as the Chinese A-share market. This half a second enables our system, which is trained with a deep-learning architecture, to integrate price prediction, trading signal generation, and optimization for capital allocation on trading signals altogether. It also leaves sufficient time to submit and execute orders before the next tick-report. Besides, we find that the number of signals generated from the system can be used to rank stocks for the preference of LOB trading. We test the system with simulation experiments and real data from the Chinese A-share market. The simulation demonstrates the characteristics of the trading system in different market sentiments, while the empirical study with real data confirms significant profits after factoring in transaction costs and risk requirements.

Keywords: Finance, Limit order book, trading system, deep learning