NANYANG TECHNOLOGICAL UNIVERSITY
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School of Computer Science and Engineering
College of Engineering

Mechanism for Trade Execution using Quarterly Earnings Announcements

With the Application of Evolving Mamdani Fuzzy Inference System with Fuzzy Rule Interpolation and Extrapolation (eMFIS(FRI/E))

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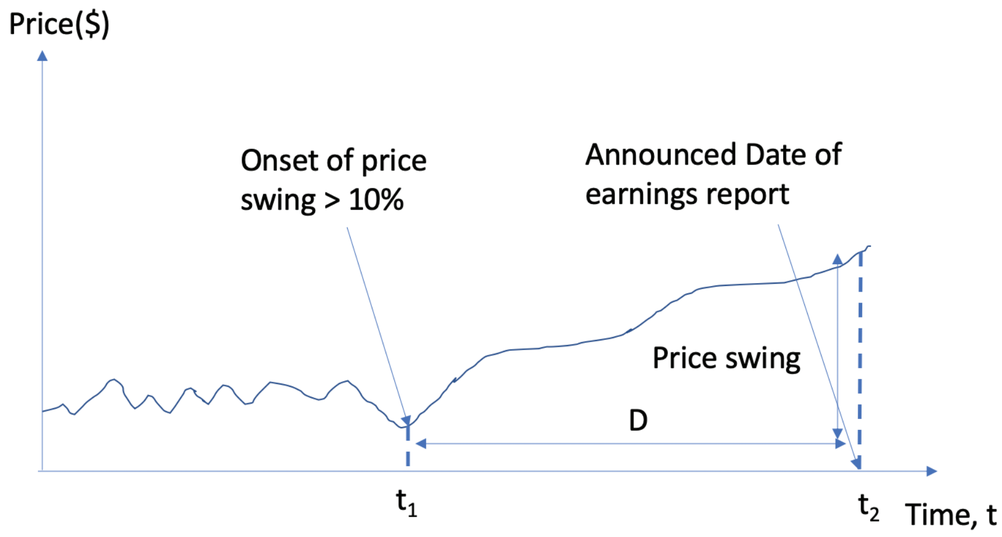
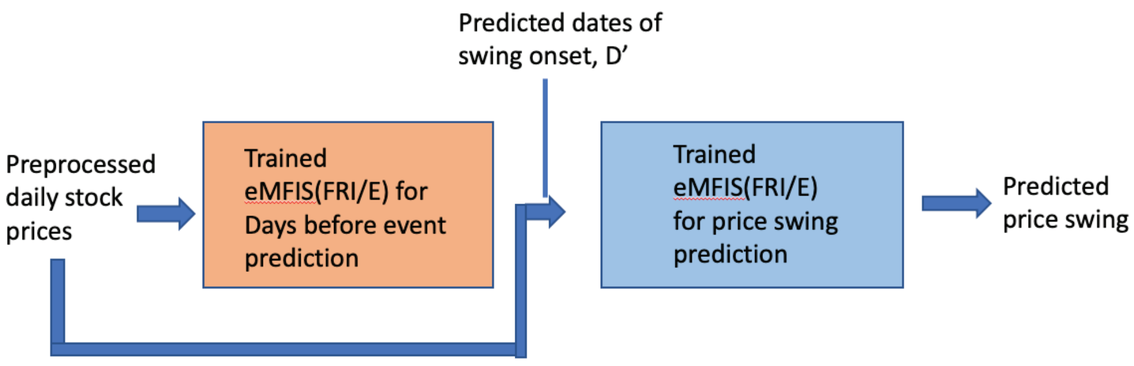
Neuro-fuzzy architecture tackles the “black-box” problem by employing techniques of fuzzy systems to achieve interpretability. The evolving Mamdani Fuzzy Inference System with Fuzzy Rule Interpolation or Extrapolation (eMFIS (FRI/E)) model developed by Susanti [1] is neuro-fuzzy architecture that is an online system for continual self-updating, and adopts an interpolation and extrapolation technique. The eMFIS(FRI/E) is adopted in the mechanism proposed in this study for the execution of trades based on knowledge of announced earnings release dates and daily stock prices.

Research Objectives:



To execute a trade, the mechanism determines the price swing, ΔP, and execution of timing, a number of days D before the announced earnings release.

Mechanism proposed



Research Objectives:

Table showing RMSE and R values for the prediction of price change by the trading mechanism using eMFIS(FRI/E) and SAFIN

	eMFIS(FRI/E)	SAFIN
DJIA	RMSE: 294.6042	RMSE: 301.532
	R: 0.6584	R: 0.4022
FORD	RMSE: 1.3130	RMSE: 1.94925
	R: 0.4955	0.27365
APPL	RMSE: 18.6647	RMSE: 6.8327
	R: 0.436	R: 0.542
IBM	RMSE: 10.1464	RMSE: 8.5757
	R: 0.157	R: 0.015023
MSFT	RMSE: 2.8232	RMSE: 3.4815
	R: 0.5127	R: 0.31585

The prototype shows potential in the feasibility of adopting eMFIS(FRI/E) for achieving goals of this mechanism as mentioned in the objectives as the predictions are coherent and follow the trends of the actual target values.

[1] Susanti, "The Evolving Mamdani Fuzzy Inference System with Fuzzy Rule Interpolation/ Extrapolation" Nanyang Technological University, School of Computing, Singapore, 2014.