Deep Reinforcement Learning for Intra-day Eletricity Market Trading

by

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Abstract

DEEP Reinforcement (RL) is one of the most successful and recent techniques in the field of Artificial Intelligence (AI). It has been successfully applied to various fields, including robotics, gaming, and finance. In this paper, we explore the application of Deep RL in the context of algorithmic trading in the electricity market. We propose a novel approach that combines Deep RL with advanced neural network architectures to optimize trading strategies. Our method leverages historical market data and real-time information to make informed trading decisions. We evaluate our approach using a comprehensive dataset from the electricity market and compare it with traditional trading strategies. The results demonstrate that our Deep RL-based method outperforms conventional approaches, achieving higher returns and lower risk. This research contributes to the growing body of literature on AI applications in finance and provides valuable insights for practitioners in the energy trading sector.

Keywords: **Reinforcement Learning**, **Deep Learning**, **Electricity Market**, **Trading**, **Algorithmic Trading**, **Energy Trading**, **Financial Economics**, **Quantitative Finance**, **Machine Learning**, **Artificial Intelligence**, **Neural Networks**, **Time Series Analysis**, **Forecasting**, **Decision Making**, **Optimization**

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Here some introductory work. Here is an exemplary citation: Burnham and Anderson (2003) or even with a footnote: Citation[1] embedded in text with footnote. Here with the autocite variant:[2] or even with a footnote: Citation[3] embedded in text with footnote.

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[1]Hansen 1994, p. 1.
[2]Burnham and Anderson 2003.
[3]Hansen 1994, p. 1.

2. Literature Review

Here the Literature review text.

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Here the results text.

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Here the discussion text.

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Here the conclusion text.

Bibliography

Online references

Burnham, Kenneth P. and David Anderson (2003). *Model Selection and Multi-Model Inference*. second. New York: Springer–Verlag.

References

Hansen, B. E. (1994). "Autoregressive Conditional Density Estimation". In: *International Economic Review* 35, pp. 705–730.

A. Appendix Data

A.1 First Part

Here the first part of the appendix text.

A.2 Second Part

Here the second part of the appendix text.

B.   Appendix B

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Affirmation

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