Application of Generative Models in Commodity Trading

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Abstract

Abstract. Sample references: Ref 1 [1], ref 2 Jebara [2].

1 Introduction

Introduction, related works, business case

2 Methodology

2.1 Stochastic differential equations

Stochastic differential equations

A Black-Scholes-Merton or geometric Brownian motion

Black-Scholes-Merton or geometric Brownian motion

B Cox-Ingersoll-Ross

Cox-Ingersoll-Ross

2.2 Generative and Discriminative models

Generative and Discriminative models

A Bayesian Inference

Bayesian Inference

B Support Vector Machines

Support Vector Machines

C Generative adversarial networks

Generative adversarial networks

3 Case study

3.1 Dataset description

Dataset description

3.2 Data preprocessing

Data preprocessing

3.3 Model description

Model description

3.4 Model training

Model training

3.5 Quality metrics and results of testing

Quality metrics and results of testing

4 Conclusion

Conclusion

References

[1] Y. Chen, Y. Wang, D. Kirschen, and B. Zhang. Model-free renewable scenario generation using generative adversarial networks. *IEEE Transactions on Power Systems*, 33(3), 2018. doi: 10.1109/TPWRS.2018.2794541.

[2] T. Jebara. *MACHINE LEARNING: Discriminative and Generative*. Kluwer Academic Publishers, 2004.