MF796 主要内容备忘

一些可以参考的代码和文献

深度学习/神经网络

1、论文

Gated Neural Networks for Option Pricing: Rationality by Design

（论文：<https://arxiv.org/abs/1609.07472）>

它论文后面附的那个代码是里面用于比较的一个基础代码的实现，好像不是深度学习的实现。所以这个不能直接用

1. 论文+代码

3D Tensor-based Deep Learning Models for Predicting Option Price

（论文：<https://arxiv.org/abs/2106.02916>

（代码：https://github.com/Tom-900/3D-Tensor-based-Deep-Learning-Models-for-Predicting-Option-Price?tab=readme-ov-file

1. 论文+代码

Deep Neural Network Framework Based on Backward Stochastic Differential Equations for Pricing and Hedging American Options in High Dimensions

基于逆向随机微分方程的高维美式期权定价与对冲深度神经网络框架

（论文：<https://arxiv.org/abs/1909.11532>

（代码：https://github.com/yangangchen/Amer\_Op\_Neural\_Net?tab=readme-ov-file

1. 论文+代码

A comparison between the Black and Scholes model and Artificial Neural Networks for option pricing and delta hedging strategy

Option pricing and Delta hedging performance comparison between Black and Scholes vs Artificial Neural Network

（论文：https://drive.google.com/file/d/10HyWkxlwQhEKOBWlki\_VtLC-yPQkAnAL/view

（代码：https://github.com/cate-art/ANN-Option-Pricing-?tab=readme-ov-file

蒙特卡洛

1. 代码

（https://github.com/jerryxyx/MonteCarlo）

A model free Monte Carlo approach to price and hedge American options equiped with Heston model, OHMC, and LSM

配备 Heston 模型、OHMC 和 LSM 的无模型蒙特卡罗定价和对冲美式期权方法

2、论文+代码

Pricing high-dimensional Bermudan options with hierarchical tensor formats

使用分层张量格式对高维百慕大期权进行定价

（论文：https://arxiv.org/abs/2103.01934

（代码：https://github.com/ptrunschke/tensor\_option\_pricing

傅立叶

1. 代码+论文

（不确定是否发表）

（https://github.com/tomrexhaynes/FastandRobustOptionPricing\_COSMethod）

A Fast and Robust Fourier Option Pricing Method: Defining a Truncation Range Formula Explicitly for Various Advanced Stock Price Models

一种快速鲁棒的傅立叶期权定价方法：为各种高级股票价格模型显式定义截断范围公式

1. 论文+代码

（论文：<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3231626）>

（代码：https://github.com/tcpedersen/anderson-lake-python）

Robust High-Precision Option Pricing by Fourier Transforms: Contour Deformations and Double-Exponential Quadrature

通过傅里叶变换进行鲁棒高精度期权定价：轮廓变形和双指数求积

3、代码

（https://github.com/arraystream/fftoptionlib?tab=readme-ov-file）

FFT-based Option Pricing Methods in Python

这个代码好像是这篇文章里面用于比较的一个基础代码

Gated Neural Networks for Option Pricing: Rationality by Design（论文：[https://arxiv.org/abs/1609.07472](https://arxiv.org/abs/1609.07472）)

其余类别

1、quadrature +American option pricing, integral equations, fixed point algorithm, Chebyshev interpolation, collocation methods

（论文：[https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2547027](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2547027）)

High Performance American Option Pricing

（代码：<https://github.com/antdvid/FastAmericanOptionPricing>

2、论文+代码

这里的论文是一个综述类型的，然后代码也是一个库，包含了很多方法

涉及到的算法有：

deep Galerkin method (~/src/blackscholes/dgm)

N-d Black Scholes equation solver; 1-d American option PDE solver

Fourier transform methods (~/src/blackscholes/fft)

Carr & Madan algorithm; N-d Conv method

Monte Carlo methods (~/src/blackscholes/mc)

N-d antithetic variates; N-d control variates; N-d Sobol sequence; 1-d importance sampling; N-d Least square Monte Carlo

PDE (~/src/blackscholes/pde)

1-d parabolic PDE solver with Dirichlet boundary condition; 1-d American option PDE solver (PSOR / penalty method); 2-d parabolic PDE solver with Dirichlet boundary condition on a rectangle domain (untested)

Micellaneous (~/src/utils, ~/src/blackscholes/utils)

The analytical solution to 1-d European option and N-d geometric average payoff European option; Helper functions for conducting numerical experiments

（论文：https://zewenshen.github.io/files/HDP\_ZewenShen.pdf

（代码：https://github.com/ZewenShen/hdp?tab=readme-ov-file