

FRE-GY 6831 Computational Finance Laboratory

Final Project

October 12th, 2018

1 Implementing a Paper

This final project for this course is to implement a model of financial mathematics in Python. The paper that you would like to implement is chosen by you. In the report, you should be able to generate the results, tables, and plots of the paper that you choose. Your report has to contain the following sections.

- ✂ **Introduction.** Describe the motivation of the model, and the idea of behind the model.
- ✂ **Mathematical Details.** Explain the mathematical details of the model, for instance, which formulae are the key steps for finishing all the computations, and so on.
- ✂ **Python Implementation.** Explain how do you programme it in Python, for instance, what is the algorithm, what functions do you use, what special data structures you choose, and so on. Show all the results, such as plots and tables.
- ✂ **Conclusion.** Summarize what do you do in this project. Provide your analysis about the model, such as advantages, disadvantages, potential improvement, and so on.
- ✂ **Appendix.** Paste all the programmes in this section. Your programmes must contain documentation.
- ✂ **Bibliography.**

2 American Options

If you choose the paper A Simple Numerical Method for Pricing an American Put Option, please functions in the *ComputationalFinance(object)* that is used in the homeworks.

3 Option Pricing with Finite Elements

If you choose the paper, Option Pricing with Finite Elements, please add a function in the *ComputationalFinance(object)* that is used in the homeworks, *Option_Pricing_FEM_EO()*, *Option_Pricing_FEM_AM()*.

4 Submission

The deadline of submitting the final project is 2018-12-31, 23:55. Late submission will not be accepted. Please submit all your *.py* files, data files, and one *.pdf* file that contains all your results, plots, and analysis, and at the end of your report, please attach all your programmes. Please make sure that you write a *main.py* file, which is the only *.py* file will be run by the instructor for checking your results.

Name	Net ID	Topic	Time
Xuhui Jin	xj648@nyu.edu	A Simple Numerical Method for Pricing an American Put Option	15 Oct, 15:07
Zhoumiao Shi	zsl277@nyu.edu	A Simple Numerical Method for Pricing an American Put Option	15 Oct, 15:02
Yanting Zhou	yz4427@nyu.edu	Option Pricing with Radial Basis Functions A Tutorial	15 Oct, 00:54
Zhongyi Zheng	zz2093@nyu.edu	Option Pricing with Finite Elements	14 Oct, 17:07
Guoqin Huang	ghl295@nyu.edu	Pricing with a Smile.	14 Oct, 16:59
Morong Li	ml5649@nyu.edu	An Empirical Comparison of Alternative Models of the Short-Term Interest Rate	16 Oct, 17:19
Kuang Gao	kg2440@nyu.edu	An Empirical Comparison of Alternative Models of the Short-Term Interest Rate	16 Oct, 23:06
Xiaoyi Yang	xylll3@nyu.edu	Analyzing volatility risk and risk premium in option contracts: A new thoery	16 Oct, 16:24

Table 4.1: Topics

