

OPTION CALCULATOR

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LIBRARIES

- **Numpy**: random number generator and other features
- **Jschema**: input / output validation of the backend
- **Scipy**: Normal distribution
- **Pydantic** : For the data validation of the server → “type”
- **FastAPI**
- **Typing_extensions**

HARDWARE REQUIREMENTS

Dependent on the Monte Carlo simulations

SOFTWARE REQUIREMENTS

- Python 3.10+
- Angular 16+
- “make utility” to run make file
- Package manager (pip for python and npm for Node.js)

Variations and Improvements

- **Binary calculator** with the 3 payoffs types.
- **Asian calculator** : Arithmetic works with Montecarlo and Geometric closed formula.
- **Dividends** : Original one doesn't change the price of the option below 5 dividends → corrected (Only for the european)-
- **American** : original uses binomial model and we used Monte-Carlo.
- **Time format**: Original one works on am/pm we use military hour.

Difficulties

- Environment problems.
- Install all the requirements for the frontend.
- Problems with different OS.
- Binary case:
 - First: only the cash option.
 - Then, we had to change the program.
- Understanding the CBO (Short replicate).