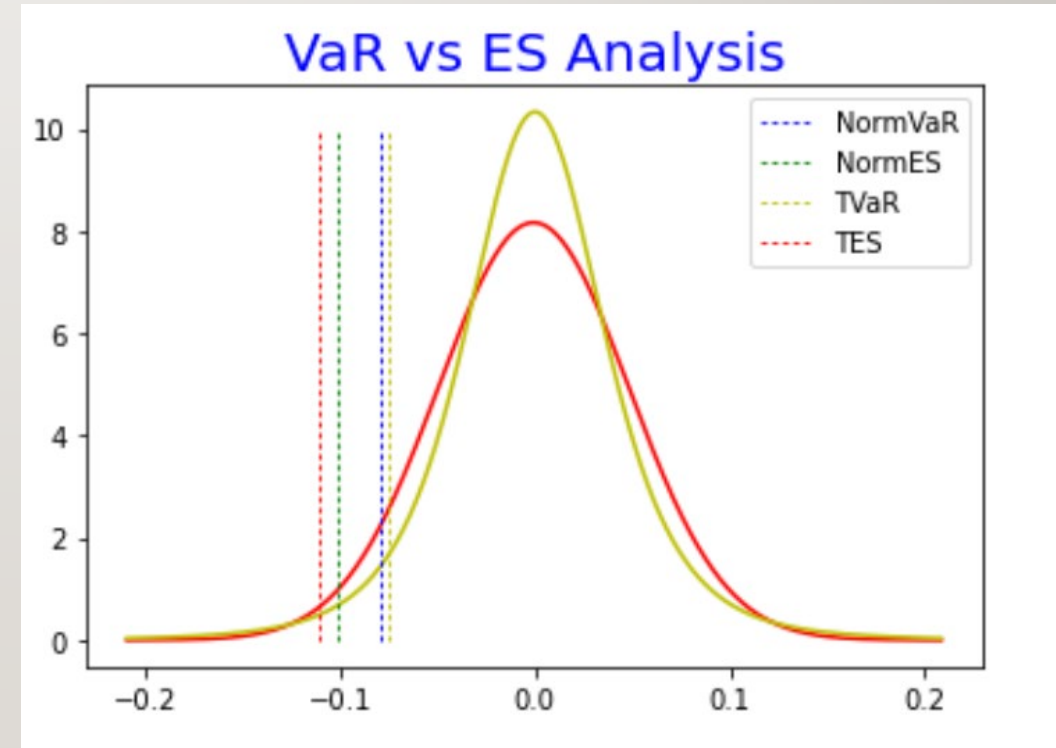


WEEK 5 ASSIGNMENT

JASON FENG

QUESTION I

- Write VaR_ES function
- Fit the data with normal and T
- Calculate the VaR and ES for both fit
- Normal fit VaR larger than the T fit VaR
- Normal fit ES smaller than T fit ES
- VaR for both fit smaller than ES



QUESTION 2

- Create a Library
- Test to run it

QUESTION 3

- T fit simulation by do copula Simulation
- Calculate the VaR and ES for each portfolio
- Meet Problem! (small than my expectation)

```
PortfolioA VaR: 1721.644530201138
PortfolioA ES: 2702.0557226768246
PortfolioB VaR: 1301.3487403741074
PortfolioB ES: 1867.5890310419659
PortfolioC VaR: 2010.760765388066
PortfolioC ES: 2560.617974539322
PortfolioTotal VaR: 741.2078310677134
PortfolioTotal ES: 1440.1317872155025
```

Portfolio	PV	Delta VaR	MC VaR	MC VaR KDE	Historical	His VaR KDE
A	364,532.9604	6003.221298	6031.353035	6133.180296	5298.490899	6607.530596
B	326,770.1488	4886.596042	4713.121717	4877.027258	5576.130248	5948.630563
C	326,727.6707 17	3679.556069	3678.559149	3809.341859	3307.758233	3987.124178
All	1,018,030.78	14100.55012	14159.42006	14209.99006	12460.87375	15411.86675