FE539 Computational Finance

Fall 2018

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Teaching assistants: TBD

Lecture hours: 13:00–16:00 FRI.

Grading:

Data Base: 40%
- Examination: 20%
- Project: 20%

Neural Network: 40%
Participation: 20%

Course description:

FE539 aims to offer computing skills that are essentially needed in the financial engineering. This course deals with Database Concept, Database Programming and Neural Network Algorithm for financial engineering. Students will learn the fundamentals of computing finance through several case studies and project-based study.

Important notice:

- The instructors may change the grading policy if needed.

Course schedule:

Week	Topic	Note
Data Base		
Week 1	Course Overview – objectives & schedule Introduction to Database	DB Project Teaming
Week 2	Introduction to the Relational Model	Install DBMS (MySQL)
Week 3	Introduction to SQL(Structured Query Language)	
Week 4	Intermediate SQL: Join/View/Integrity Constraints	
Week 5	Advanced SQL: Procedure/Function/Trigger	
Week 6	Advanced SQL: Query Optimization	
Week 7	Database Design/Project presentation	Submit project doc.
Week 8	Examination	
Neural Network		
Week 9	Supervised Learning/Deep Neural Networks/Backpropagation	
Week 10	Applications to Financial Data/Classification/Regression/ Radial Basis Function Neural Network	
Week 11	Financial Time Series Data/Recurrent Neural Network(RNN) TDNN, NARX Models	
Week 12	State-space models/AR/ARMA/ARIMA models	
Week 13	1st presentation of project	
Week 14	Universal Approximation for DNN and RNN Derivation of BP	
Week 15	Long Short Term Memory(LSTM) Gated Recurrent Units(GRU)	
Week 16	Final Presentation of Project	

* This schedule is subject to change.