2022 Fall
IE 313 Time-Series Analysis

Term Project

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Requirements

- 1. Get your own time series data
  - From internet, your own project, etc.
    - Source examples
      - https://www.aihub.or.kr/open_data_board
      - https://www.kaggle.com/datasets
      - https://research.google/tools/datasets/
      - https://www.investing.com/
  - Describe your data
    - What is it about
    - Period, frequency, size, …

Requirements

- 2. Set a relevant problem
  - What do you want to know from data?
  - How that information can be helpful?
    - For business, academic purpose, public good, …

Requirements

- 3. Specify at least two models
  - Perform exploratory analysis
    - Plot your series, ACF, PACF, …
  - Transform into a stationary series
    - Differencing, logarithm, power, …
  - Suggest at least two models
    - At least one of them must be an ARIMA model (seasonal models are also fine)
    - The other is up to you
      - Another ARIMA or seasonal ARIMA
      - VAR
      - ARCH, GARCH
      - State space models (Kalman filter, HMM)
      - Neural network models
      - (If you use open source packages, please describe about it)

Requirements

- 4. Fit your models
  - Show how your models fit well to your data
    - Residual analysis
    - AIC, BIC
    - etc

Requirements

- 5. Inference
  - From the previous analysis, what can you learn about your data?
  - Can you derive some conclusion or suggestions from that information?

Teams

- **Formed by instructors**
  - We tried to mix everything
    - Major, grade, nationality, …

Outputs

- **Proposal**
  - Single page document
  - Explain what you are going to do
    - Data, problem setting, and candidate models
  - **Due: November 25 (Fri), 23:59**
  - Submit via e-mail (to yongjaelee@unist.ac.kr)
    - Only team leaders
  - Brief feedbacks will be given to the team leaders

Outputs

- **Presentation video and slide**
  - 15-minute presentation video and slide
  - These will be shared within the class
  - All of you will do “peer review”

  - **Due: December 16 (Fri), 23:59**
  - Submit via e-mail (to yongjaelee@unist.ac.kr)
    - Only team leaders
  - Instructors will share the videos and slides on December 17
  - Peer review should be done within
    - December 17 ~ 19

Outputs

- **Final Report**
  - Explain your data, problem, models, and analysis
  - Role and contribution of each team member
  - Peer review feedback will be summarized by TAs and given to you
  - You should prepare the final report based on the feedbacks
  - **Due: December 23 (Fri), 23:59**
  - Submit via e-mail (to yongjaelee@unist.ac.kr)
    - Only team leaders

Meeting with me

- If you need any help or comments regarding the project, you may ask me for a meeting
  - Within class time (Mon/Wed 16:00 ~ 17:30)
  - Between November 28 and December 7

Evaluation criteria (tentative)

- **Term project (100%)**
  - **Proposal (10%)**
    - Submission 80%, problem and data selection 20%
  - **Presentation (30%)**
    - Since detailed contents will be evaluated in the final report, I will evaluate presentations in terms of how you managed to deliver necessary information to audience within a limited time
      - Contents should be logically and cocisely organized so that audience can understand the importance of the problem, data processing, model selection, analysis, and its implications
  - **Peer review (+10%)**
    - Additional points will be given to the best two or three teams
  - **Final report (60%)**
    - Problem setting and data 30%, exploratory analysis and model selection 30%, results and analysis 20%, individual contribution 20%