CMPE 481 Data Analysis and Visualization
Fall 2021-2022

Instructor: Berk Gökberk
Email: berk.gokberk@boun.edu.tr
Office Location & Hours: ThThTh 789 (Online)

Course Content
Part I - Data Analysis
- Introduction to Data Analysis
- Data Ecosystem
- Data Gathering, Wrangling/Munging
- Statistical Data Analysis
- Data Transformations (Attribute selection, discretizing, projections, sampling, cleansing, rescaling)
- Knowledge Representation (Tables, Linear Models, Trees, Rules, Clusters)
- Exploring One- and Two-Dimensional Data
- High-Dimensional Data Analysis
- Dimensionality Reduction for Visualization

Part II - Data Visualization
- Introduction to Information Visualization
- Principles of Human perception and Cognition in Visualization Design
- Data Abstraction
- Fundamental Graphs and Data Transformation
- Graphical Components and Mapping Strategies
- Working with Different Data Types (Temporal, Spatial, Spatio-Temporal, Networks, Trees, Text)
- Interactive Visualization
- Annotation and Composition
- Communicating Data-driven Findings

Course Material
- Data Visualization - A Practical Introduction, Kieran Healy, 2019, Princeton University Press
- Data Science from Scratch, Joel Grus, 2015, O'Reilly

Grading
- Projects, Assignments, In-class Assessments (70%)
- Final Take-Home Exam (30%)