Johannes Mäkinen

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Education

M.Sc. (Tech.) Mathematics and Operations Research • Aalto University Sep. 2020 – May 2023

- Minor in Machine Learning & Data Science
- Emphasis on optimization, statistical inference and decision analysis

B.Sc. (Tech.) Mathematics and Systems Sciences • Aalto University Sep. 2017 – May 2020

- Minor in Computer Science

Experience

Analyst • Terveystalo April 2020 – Present

- Identified and analyzed customer steering opportunities. Provided solutions for more efficient self-service processes that led to increased revenue.
- Created and maintained weekly and monthly customer traffic reports using Excel, Powerpoint, Qlikview & Piwik. The whole organization used these to find inefficiencies and targets to improve on.
- Performed K-means clustering and time series analyses to compute the rules for our new customer steering rule-based engine.
- Created a way to compute the revenue and profit of clinical care paths for customer segments. This helped to maximize profits during peak demand.
- Performed customer analysis for marketing to find most profitable campaigns to run.
- Determined corporate customers that had low self-service levels. This helped us target them and in the end reduced cost inefficiencies.

Research Assistant • Aalto University, Systems Analysis laboratory Jun. 2019 – Sep. 2019

- Did my B.Sc. thesis on *"Estimating the protection provided by islands against anti-ship missiles"*
- The thesis was involved in a larger study on enhancing combat simulation models with adversarial risk analysis.

Projects More info at johmakinen.github.io

Automatic portfolio optimization | *Python, Flask, Docker, HTML, Javascript, GCP*

- A tool to fetch given assets' adjusted closing prices from Yahoo Finance.
- Using the historical prices, optimize a portfolio with the assets weighted using the *Markowitz model*.
- Dockerized the tool, served it with Gunicorn and deployed with the Google Cloud Platfrom (GCP).

Hotel demand prediction | *Python, XGBoost, Seaborn*

- Predicting demand given booking curves. XGBoost was fitted to reservations on hand for each day until arrival date.
- This prediction method is more efficient than having multiple time series models for each booking curve length, as we only need one XGBoost model (it can be fitted to nan -values which are always present in booking curves).
- Reasonable accuracy for daily predictions with weekly horizon (MAPE of 8%).

Finnish house prices scraper, EDA and prediction | *Python, Scikit-Learn, XGBoost*

- Implemented an OOP -style datascraper using Selenium to get house data. Then cleaned it and saved to a SQLite database.
- Exploratory Data Analysis (EDA) on the scraped house data. Implemented a model to predict the price of a house given its several features like size and location.
- The prediction was done using a Extreme Gradient Boosting Regression model. The model performed quite well given the noisy data.

Skills

- Statistical Inference
- Machine Learning
- Optimization
- Regression techniques
- Times Series Analysis
- Decision Analysis
- Information Visualization
- Classification

Technical Summary

Languages: Python, R, SQL, C, STAN, Scala
Technologies: RStudio, VS Code, Git, Jupyter, Docker, MS Office
Data Science: Pandas, Numpy, Scikit-learn, MatplotLib, Plotly, Streamlit, Selenium, Tidyverse, ggplot2, RShiny, Flask, Cython