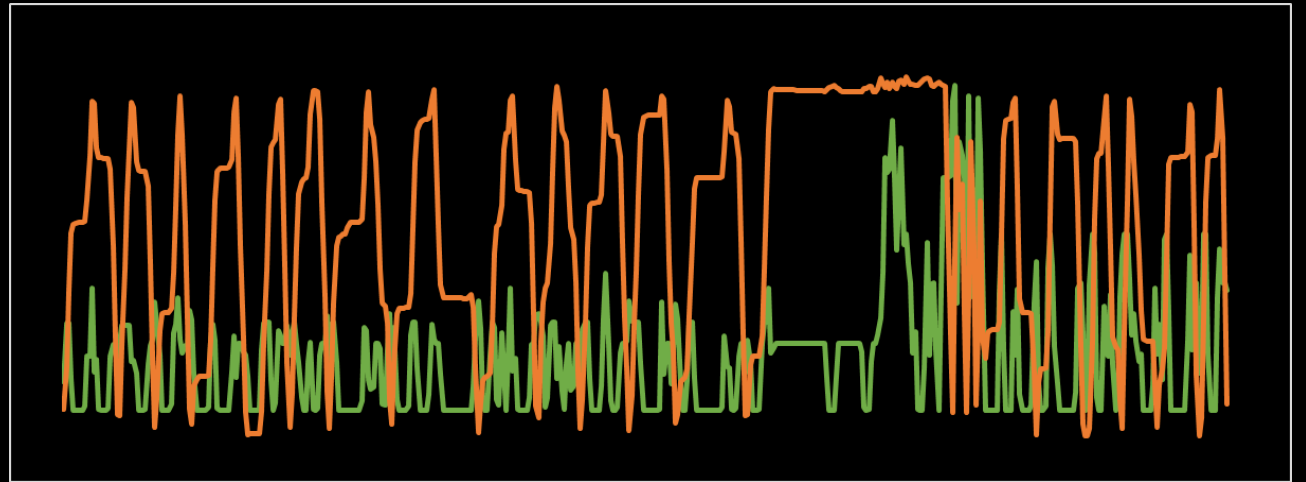


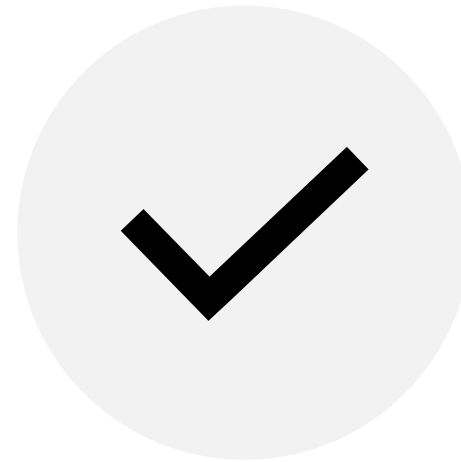
Trell Science –
Data Science case exercise
Option 3: Demand
prediction



Purpose of the assignment



THE PURPOSE OF THE ASSIGNMENT IS TO ASSESS HOW YOU UNDERSTAND AND WORK WITH DATA, YOUR PROGRAMMING SKILLS, AND HOW YOU COMMUNICATE THE RESULT OF YOUR WORK



FOR THE PURPOSE OF OUR EVALUATION YOU DON'T HAVE TO CREATE A FINISHED, PERFECT PRODUCT (SEE ASSIGNMENT GUIDELINES). WE WILL FOCUS MOST ON HOW YOU WORK, AND ONLY PARTLY ON THE END RESULT, AS THIS IS LARGELY A RESULT OF HOW MUCH TIME ONE SPENDS ON THE EXERCISE

Case assignment

- Trell's client (an energy company) has asked Trell to predict the hourly demand for district heating for a specific area. By getting a 24+ hour prediction, the client hopes to be able to better plan distribution in order to avoid shortages.

The assignment

1. As a first step, our client would like a prototype model that can predict the hourly heat demand for the area. At your disposal we have historical data for the demand, including weather and calendar information. Each prediction should be for at least 24 hours into the future. For demonstration purposes, predict the demand for the first week of February 2019 (could be one prediction for each day, or one long prediction for all 7 days)
2. Please also prepare a short analysis of the results from the model, including your recommendations for the next steps. (Please note that, for the sake of the exercise, the model does not have to be finished or have good results – you decide how much time you want to spend on the model)
3. Internally at Trell, we are interested in knowledge sharing. Please guide us through your way of working with the data when creating the model

Assignment guidelines

- **AUDIENCE:** For the model (task 1), consider that you are presenting the model to our client's distribution planning team. For the internal knowledge sharing (task 2), you are presenting to your colleagues
- **EFFORT:** There's no time limit to the exercise, but we expect you to spend 2-4 hours of work on it. It is possible to spend much more time, but as stated below, we focus the assessment on how you handle the problem, and a 'finished' product is not needed for this
- **INPUTS/OUTPUTS:** Data have been provided in a CSV file. Feel free to add additional data and features if you wish. Use whatever software you like to complete the assignment, but please make sure you can present the results and your work in an understandable way
- **ASSESSMENT:** We will focus our assessment on how you approach and structure the assignment, your skills understanding and working with data (understanding and make sense of the data is part of the assignment), and modelling skills. We will take into consideration the time you chose to put into the assignment and thus do not expect to see a perfect model, as long as you manage to convey your skills in a good way
- **QUESTIONS:** You can ask questions of Tom Wrigglesworth: tom@trell.se or 0739-898962

Assignment data - The data is in a separate CSV file

- tstamp – timestamp for measurement
- **consumed_heat – energy consumed during the hour. This is the value to be predicted**
- temp – outdoor temperature during the hour
- cloud – measurement of cloudiness during the hour
- day_of_week – day of week (string)
- holiday_in_general – 1 means period when most people have holiday in Sweden
- school_holiday_period - 1 means usual period for school holiday in Sweden
- public_holiday_period – 1 means public holiday in Sweden
- wind_direction – direction of wind in degrees (0-360)
- wind_speed – wind speed in m/s