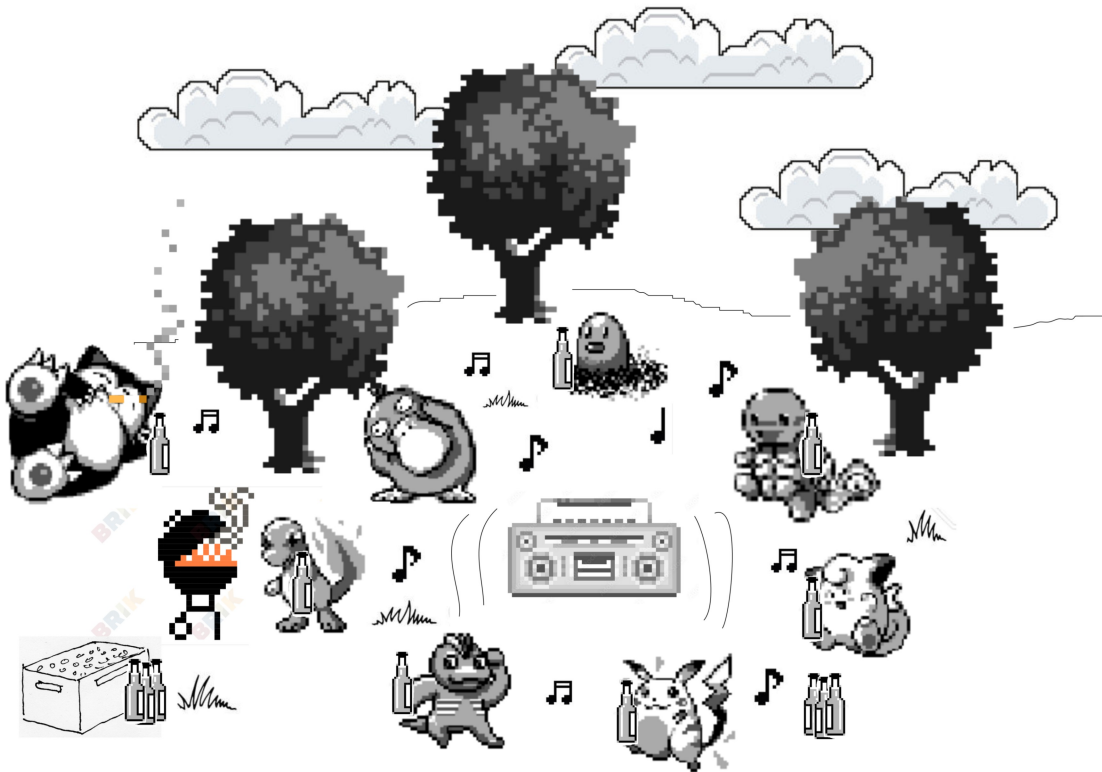


Classification of rain clouds

Introduction

- Imagine some Pokémons have a BBQ in the park...



The Dataset

- Data from a Weather Station in London
- Weather data recorded *every minute* for the last 4 years

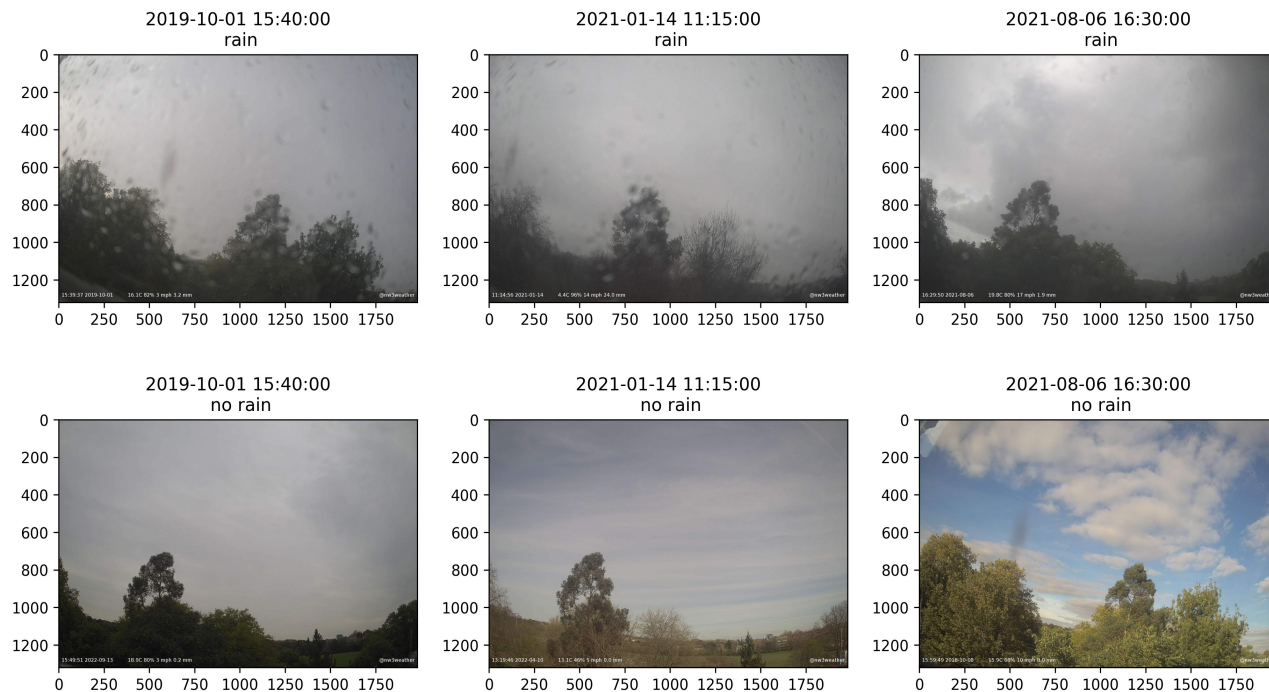
	datetime	10-min wind speed [mph]	Max Gust [mph]	Wind direction [degrees]	Temperature [°C]	Relative humidity [%]	Pressure [hPa]	Dew Point [C]	Daily rain total [mm]
0	2018-07-01 00:00:00	6.7	12.7	25	18.4	57	1015.1	9.7	0.0
1	2018-07-01 00:01:00	6.7	12.7	25	18.4	57	1015.1	9.7	0.0
2	2018-07-01 00:02:00	6.1	12.7	50	18.4	57	1015.1	9.7	0.0
3	2018-07-01 00:03:00	5.3	11.5	65	18.4	57	1015.1	9.7	0.0
4	2018-07-01 00:04:00	6.9	10.4	46	18.4	57	1015.1	9.7	0.0
...
2298235	2022-11-12 23:55:00	2.1	2.3	134	11.3	96	1025.4	10.7	0.0
2298236	2022-11-12 23:56:00	2.8	3.5	132	11.3	96	1025.4	10.7	0.0
2298237	2022-11-12 23:57:00	1.6	4.6	151	11.3	96	1025.5	10.7	0.0
2298238	2022-11-12 23:58:00	1.0	2.3	151	11.3	97	1025.5	10.8	0.0
2298239	2022-11-12 23:59:00	1.7	2.3	125	11.3	97	1025.5	10.8	0.0

2298240 rows × 9 columns

Source: <http://nw3weather.co.uk/>

The Dataset

- Snapshots of the sky every 5 minutes for the last 4 years



131498 Pictures

2312 rain cloud pictures (approx 500-1000 without drops)

Idea: use this data and try to identify the rain clouds with a convolutional neural network



Possible project content

- Scraping the data from the website ✓
- Cleaning the data (sorting out unusable images)
- Extract subimages (smaller image size, more pictures)
- Define Features and Targets and choose a suitable model for the classification task (maybe a pretrained CNN-model?)
- Setup and train a first model and compare results to a base line case
- Tune the model and try to improve the accuracy
- (Bonus) Classify other types of clouds (can we detect if its sunny or slightly cloudy? Can we detect transient clouds short before the rain starts?)
- (Bonus) Create an application (user can upload cloud images and we classify the clouds)
-

Thank you for your attention!

