Toronto Bike-Sharing Demand Prediction

Group 7

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SCHOOL OF CONTINUING STUDIES

Overview of The Project

Correlation(s) between the different types of weather conditions and the demand on bike sharing

Project Scope

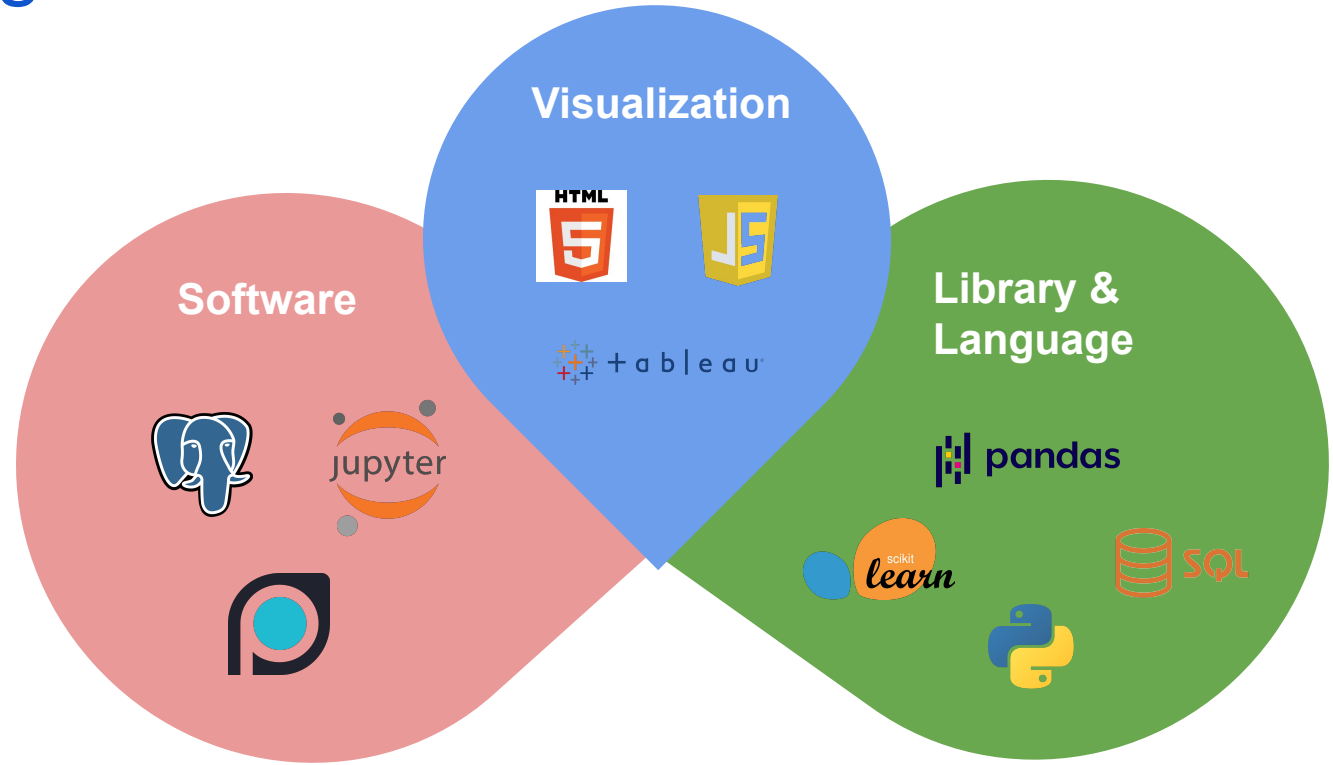
Location

Toronto - Ontario- Canada

Time

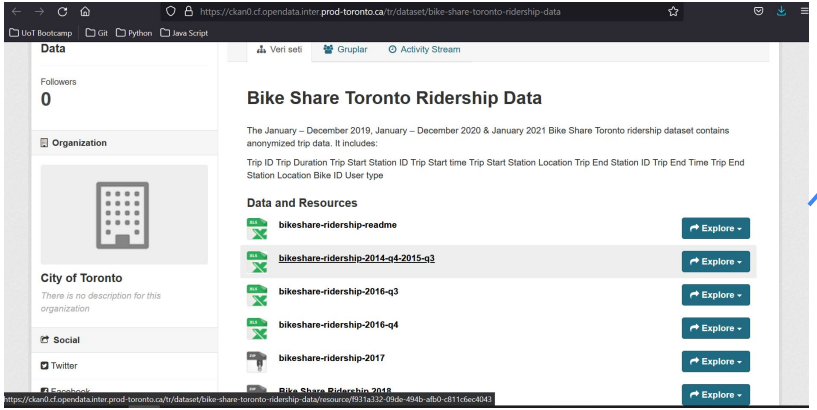
3 Years
1 Jan 2019 to 31 Dec 2021

Tools


Visualization
HTML
tableau
Software
jupyter
Library &
Language
pandas
scikit
learn
SQL

Data & Database

Data Extraction- Bike Data



	A	B	C	D	E	F	G	H	I	J	K
1	Trip Id	Trip Dura	Start Static	Start Time	Start Static	End Statio	End Time	End Statio	Bike Id	User Type	
2	7452736	625	7162	02/01/202	Hayter St /	7190	02/01/202	St. George	653	Annual Member	
3	7452737	426	7170	02/01/202	Spadina A	7239	02/01/202	Bloor St W	4682	Annual Member	
4	7452738	817	7475	02/01/202	Jarvis St /	7075	02/01/202	Queens Q	3852	Annual Member	
5	7452739	653	7099	02/01/202	Cherry St /	7292	02/01/202	Granby St	4546	Annual Member	
6	7452740	189	7176	02/01/202	Bathurst S	7402	02/01/202	Wellingtor	4867	Annual Member	
7	7452741	942	7398	02/01/202	York St / H	7426	02/01/202	Fleet St / (	2597	Annual Member	
8	7452742	257	7014	02/01/202	Sherbourr	7113	02/01/202	Parliamen	3493	Annual Member	
9	7452743	237	7254	02/01/202	Borden St	7078	02/01/202	College St	111	Annual Member	
10	7452744	622	7002	02/01/202	St. George	7155	02/01/202	Bathurst S	2727	Annual Member	
11	7452745	527	7118	02/01/202	King St W /	7322	02/01/202	King St W /	481	Annual Member	
12	7452746	255	7031	02/01/202	Jarvis St /	7042	02/01/202	Sherbourr	3745	Annual Member	
13	7452747	1257	7385	02/01/202	20 Charles	7350	02/01/202	Broadview	1522	Annual Member	
14	7452748	911	7271	02/01/202	Yonge St /	7299	02/01/202	Mill St / Pa	993	Annual Member	
15	7452749	434	7005	02/01/202	King St W /	7261	02/01/202	Queens Q	1339	Annual Member	
16	7452750	855	7023	02/01/202	College St	7026	02/01/202	Bay St / St	3560	Annual Member	
17	7452751	311	7003	02/01/202	Madison A	7239	02/01/202	Bloor St W	86	Annual Member	
18	7452752	1207	7012	02/01/202	Elizabeth S	7111	02/01/202	King St W /	1283	Annual Member	
19	7452753	269	7199	02/01/202	College St	7184	02/01/202	Ossington	1437	Annual Member	
20	7452754	740	7239	02/01/202	Bloor St W	7072	02/01/202	Fleet St / E	4682	Annual Member	
21	7452755	407	7494	02/01/202	Davenpor	7271	02/01/202	Yonge St /	4610	Annual Member	

Data Cleaning- Bike Data

In [2]:

In [20]:

```
#change column order
df_final2=df_final2[['Date','counts_trips','counts_Bike','tr

df_final2
```

Out[20]:

	Date	counts_trips	counts_Bike	trip_duration	counts_member_ann	
0	2019-01-01	1064	674	1121463.0	[illegible]	
1	2019-01-02	2290	1135	2838818.0	220[illegible]	
2	2019-01-03	2279	955	1650338.0	2228	
3	2019-01-04	3290	1381	2269606.0	3130	160.0
4	2019-01-05	2160	1053	1468872.0	[illegible]	223.0
...	...	...	...	...	...	...
1091	2021-12-27	1265	756	955753.0	873	392.0
1092	2021-12-28	3054	1466	2356616.0	2025	1029.0
1093	2021-12-29	3521	1668	2896184.0	2440	1081.0
1094	2021-12-30	4065	1785	2938443.0	2836	1229.0
1095	2021-12-31	4832	1973	4279555.0	3186	1646.0

1096 rows × 6 columns

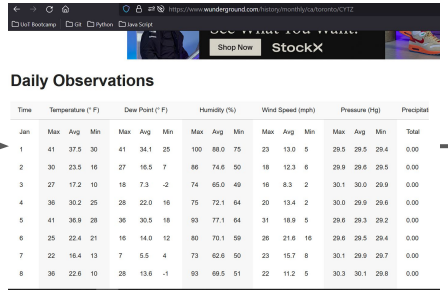
In [3]:

Out[3]:

- Combine All CSV
- Count bike
- Sum Trip Duration
- Count Member Annual
- Count Member Casual

Data Extraction- Weather Data

SCRAPE FROM WEB

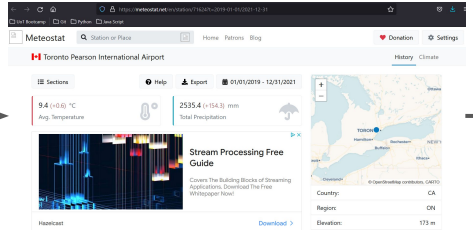


Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitat
Jan	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Total
1	41	37.5	30	41	34.1	25	100	88.0	75	23	13.0	5	29.5	29.5	29.4	0.00
2	30	23.5	16	27	16.5	7	86	74.6	50	18	12.3	6	29.9	29.6	29.5	0.00
3	27	17.2	10	18	7.3	-2	74	65.0	49	16	8.3	2	30.1	30.0	29.9	0.00
4	36	30.2	25	28	22.0	16	75	72.1	64	20	13.4	2	30.0	29.9	29.6	0.00
5	41	36.9	28	36	30.5	18	93	77.1	64	31	18.9	5	29.6	29.3	29.2	0.00
6	25	22.4	21	16	14.0	12	80	70.1	59	26	21.6	16	29.6	29.5	29.4	0.00
7	22	16.4	13	7	5.5	4	73	62.6	50	23	15.7	8	30.1	29.9	29.7	0.00
8	36	22.6	10	28	13.6	-1	93	69.5	51	22	11.2	5	30.3	30.1	29.8	0.00

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	W_Year	W_Month	W_Day	W_Max_D	W_Avg_d	W_Min_D	W_Max_w	W_Avg_w	W_Min_w	W_Max_h	W_Avg_hi	W_Min_humid	
2	1.527083	Jan	Jan	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	
3	1.527083	Jan	1	43	30.9	12	23	13.3	2	100	85.5	64	
4	1.527083	Jan	2	32	22.9	12	13	7.4	5	100	84	74	
5	1.527083	Jan	3	32	28.6	23	23	11.3	0	100	86	69	
6	1.527083	Jan	4	36	32.2	30	18	11.7	5	87	80.7	70	
7	1.527083	Jan	5	34	31.8	30	20	10.1	2	93	83.7	75	
8	1.527083	Jan	6	37	24.6	7	18	12.2	7	93	68.6	46	
9	1.527083	Jan	7	36	21.7	9	29	16.5	5	93	73.3	58	
10	1.527083	Jan	8	45	38	36	20	7.9	0	100	90.2	76	
11	1.527083	Jan	9	36	23.1	16	30	18.3	10	87	68.1	55	
12	1.527083	Jan	10	18	11.9	7	26	16.5	7	79	66.8	54	
13	1.527083	Jan	11	7	0.5	-4	20	9.8	2	73	53.6	36	
14	1.527083	Jan	12	12	9.5	5	14	8.1	0	68	58.8	50	
15	1.527083	Jan	13	14	9.7	3	17	13.7	9	79	68.5	46	
16	1.527083	Jan	14	21	18.2	14	15	7.8	2	86	74.3	64	
17	1.527083	Jan	15	27	25.6	21	29	16.9	8	86	81	74	
18	1.527083	Jan	16	30	23.3	3	26	20.3	5	93	79.1	43	
19	1.527083	Jan	17	21	11.8	3	12	7.8	3	86	69.5	58	
20	1.527083	Jan	18	27	22.1	12	22	9.4	0	93	75	51	
21	1.527083	Jan	19	12	2.2	0	17	10.9	5	79	72.9	49	

2019 1

DOWNLOAD



	A	B	C	D	E	F	G	H	I	J	K
1	date	tavg	tmin	tmax	prcp	snow	wdir	wspd	wpgt	pres	tsun
2	2019-01-01	-1.4	-8	5.2	0.6		325.6	24.5	58	1015.1	
3	2019-01-02	-4.9	-9.3	-0.5	3.6	0	68.1	10.1		1023	
4	2019-01-03	-1	-2.8	0.8	0.2	30	249	20.2	46	1013.3	
5	2019-01-04	3.6	-0.8	8	0	30	244.4	22.9	54	1007.6	
6	2019-01-05	1.2	-1.7	4	0	0	302	13.4	33	1006.1	
7	2019-01-06	-1.7	-7.3	4	0		343.1	23.4	52	1021.3	
8	2019-01-07	-1.4	-8.4	5.7	2.8	0	100.3	21.3	63	1023.2	
9	2019-01-08	5.3	2.4	8.2	3.8		246.8	12.9	50	1004.6	
10	2019-01-09	-1.3	-4.9	2.3	0	0	299.2	32.2	71	1007.9	
11	2019-01-10	-8	-11.4	-4.6	0	0	317.1	32.4	61	1018.8	
12	2019-01-11	-10.7	-13.8	-7.5	0	0	333.2	17.1	41	1030.2	
13	2019-01-12	-6.7	-9	-4.3	0		27.1	10.6		1034.3	
14	2019-01-13	-8.7	-11.9	-5.4	0		53.3	13.1		1032.4	
15	2019-01-14	-4.3	-7.8	-0.8	0		284.8	8.7		1026	
16	2019-01-15	-2	-4.1	0.1	0		238	19.5	54	1019.1	
17	2019-01-16	-6.3	-12.2	-0.3	0.4	0	288.2	27.1	63	1019.2	
18	2019-01-17	-8.4	-13.2	-3.5	0.6	0	86.6	7.8		1025	
19	2019-01-18	-5.4	-10.4	-0.4	1.6	20	297.7	15.8	46	1018.4	
20	2019-01-19	-13.6	-16.8	-10.3	5.4	0	18.7	21.6	42	1023.3	
21	2019-01-20	-18	-21.8	-14.2	1.6	80	346.7	34.5	67	1015.3	

Data Cleaning- Weather Data

In [256…

```
import pandas as pd
import glob
import os
# read file from wunderground.com
path = r'D:\bootcamp\week_20_Final_Project\BIke sharing\weather\Wunderground'
all_files = glob.glob(os.path.join(path, "*.csv"))
```

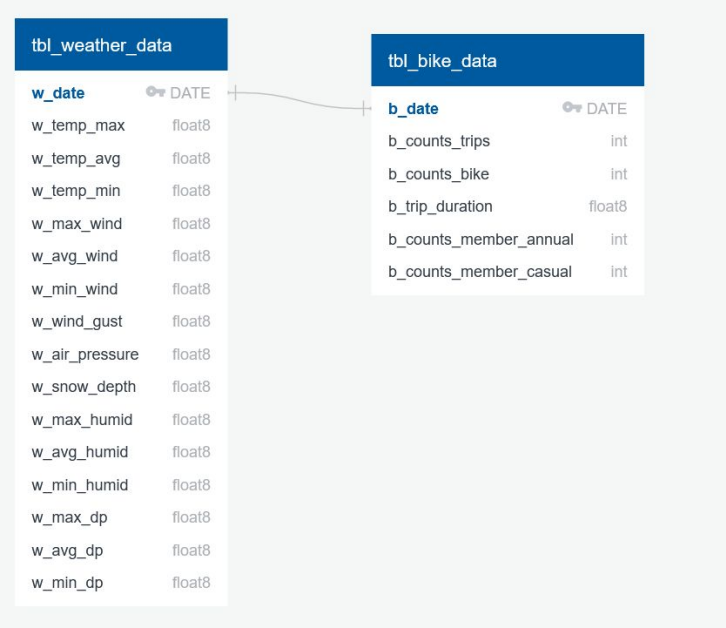
- Combine CSV for result from scraping
- Change Date format

Out[18]:

W_date	W_Temp_Max	W_Temp_Avg	W_Temp_Min	W_Max_wind	W_Avg_wind	W_Min_wind	W_Wind_Gust	W_Air_Pressure	W_Snow_Depth	W_Max_humid	W_Avg_humid	W
2019-01-01	5.2	-1.4	-8.0	37.0	21.4	3.2	58.0	1015.1	NaN	100.0	85.5	
2019-01-02	-0.5	-4.9	-9.3	20.9	11.9	8.0	NaN	1023.0	0.0	100.0	84.0	
2019-01-03	0.8	-1.0	-2.8	37.0	18.2	0.0	46.0	1013.3	30.0	100.0	86.0	
2019-01-04	8.0	3.6	-0.8	29.0	18.8	8.0	54.0	1007.6	30.0	87.0	80.7	
2019-01-05	4.0	1.2	-1.7	32.2	16.3	3.2	33.0	1006.1	0.0	93.0	83.7	

4	3: 2019	Jan	4	36	32.2	30	18	11.7	5	87	80.7	70
...	...	...	...	...	...	...	...	...	...	...	...	...
1126	1: 2021	Sep	26	54	49.0	45	17	8.9	0	77	66.9	49
1127	1: 2021	Sep	27	61	58.1	55	14	6.8	0	94	80.9	61
1128	1: 2021	Sep	28	57	44.8	37	12	7.4	2	82	60.1	37

Entity Relationship Diagram



Database

- Tables (2)
  - tbl_bike_data
  - tbl_weather_data

```
4 select * from tbl_bike_data
5
```

Data Output | Explain | Messages | Notifications

	b_date [PK] date	b_counts_trips integer	b_counts_bike integer	b_trip_duration double precision	b_counts_member_annual integer	b_counts_member_casual integer
1	2019-01-01	1064	674	1121463	897	167
2	2019-01-02	2290	1135	2838818	2207	83
3	2019-01-03	2279	955	1650338	2228	51
4	2019-01-04	3290	1381	2269606	3130	160
5	2019-01-05	2160	1053	1468872	1937	223
6	2019-01-06	1757	946	1265686	1595	162
7	2019-01-07	3037	1349	2198275	2971	66
8	2019-01-08	3560	1438	2339841	3493	67
9	2019-01-09	3532	1457	2505796	3470	62
10	2019-01-10	3067	1369	2384689	3011	56
11	2019-01-11	2663	1233	1823376		
12	2019-01-12	1690	924	1205567		

✔ Successfully run. Total query runtime: 70 msec. 1096 rows affected.

```
4 select * from tbl_weather_data
5
6
7
8
```

Data Output | Explain | Messages | Notifications

	w_date [PK] date	w_temp_max double precision	w_temp_avg double precision	w_temp_min double precision	w_max_wind double precision	w_avg_wind double precision	w_min_wind double precision	w_wind_gust double precision	w_air_pressu double precis
1	2019-01-01	5.2	-1.4	-8	37	21.4	3.2	58	
2	2019-01-02	-0.5	-4.9	-9.3	20.9	11.9	8	0	
3	2019-01-03	0.8	-1	-2.8	37	18.2	0	46	
4	2019-01-04	8	3.6	-0.8	29	18.8	8	54	
5	2019-01-05	4	1.2	-1.7	32.2	16.3	3.2	33	
6	2019-01-06	4	-1.7	-7.3	29	19.6	11.3	52	
7	2019-01-07	5.7	-1.4	-8.4	46.7	26.6	8	63	
8	2019-01-08	8.2	5.3	2.4	32.2	12.7	0	50	
9	2019-01-09	2.3	-1.3	-4.9	48.3	29.5	16.1	71	
10	2019-01-10	-4.6	-8	-11.4	41.8	26.6	11.3	61	
11	2019-01-11	-7.5	-10.7	-13.8					

✔ Successfully run. Total query runtime: 112 msec. 1096 rows affected.

Connection to Machine Learning

In [1]:
```
# import pandas and create database engine
import pandas as pd
from sqlalchemy import create_engine
import psycopg2
from config import db_password

db_string = f"postgresql://postgres:{db_password}@localhost/Bike_sharing"
```

In [2]:
```
# Create the database engine
engine = create_engine(db_string)
```

In [7]:
```
# Join table tbl_bike_data and tbl_weather_data
Merged_df = pd.read_sql_query('select * from tbl_bike_data a join tbl_weather_data b on a.b_date=b.w_date',con=engin
Merged_df
```

Out[7]:

	b_date	b_counts_trips	b_counts_bike	b_trip_duration	b_counts_member_annual	b_counts_member_casual	w_date	w_temp_max	w_temp_avg
0	2019-01-01	1064	674	1121463.0	897	167	2019-01-01	5.2	-1.4
1	2019-01-02	2290	1135	2838818.0	2207	83	2019-01-02	-0.5	-4.9
2	2019-01-03	2279	955	1650338.0	2228	51	2019-01-03	0.8	-1.0
3	2019-01-04	3290	1381	2269606.0	3130	160	2019-01-04	8.0	3.6

Additional Data for Visualization

	A	B	C	D	E	F	G	H	I	J	K
1	Trip Id	Trip Dura	Start Stati	Start Time	Start Stati	End Statio	End Time	End Statio	Bike Id	User Type	
2	7452736	625	7162	02/01/202	Hayter St /	7190	02/01/202	St. George	653	Annual Member	
3	7452737	426	7170	02/01/202	Spadina A	7239	02/01/202	Bloor St W	4682	Annual Member	

```
[165…
#rename and rearrange column so it will be easier to read
Merged_station_data_df.columns=['r_trip_duration','r_start_time','r_end_time','r_bike_id','r_member_type','r_date','r_start_station_id','
Merged_station_data_df_final=Merged_station_data_df[['r_date','r_trip_duration','r_bike_id','r_member_type','r_start_station_id','r_start
Merged_station_data_df_final
```

:[165…

	r_date	r_trip_duration	r_bike_id	r_member_type	r_start_station_id	r_start_station_name	r_start_time	r_start_lat	r_start_long	r_end_station_id	r_end_station_name
0	2019-01-01	1547.0	1296	Annual Member	7021.0	Bay St / Albert St	01/01/2019 00:08	43.653264	-79.382458	7233.0	King / Cowan Ave - SMART
1	2019-01-01	1112.0	2947	Annual Member	7160.0	King St W / Tecumseth St	01/01/2019 00:10	43.643333	-79.405556	7051.0	Wellesley St E / Yonge St (Green P)
2	2019-01-01	589.0	2293	Annual Member	7055.0	Jarvis St / Carlton St	01/01/2019 00:15	43.662070	-79.376170	7013.0	Scott St / The Esplanade
3	2019-01-01	259.0	283	Annual Member	7012.0	Elizabeth St / Edward St (Bus Terminal)	01/01/2019 00:16	43.656026	-79.385327	7235.0	Bay St / College St (West Side) - SMART
4	2019-01-01	281.0	1799	Annual Member	7041.0	Edward St / Yonge St	01/01/2019 00:19	43.656729	-79.382736	7257.0	Dundas St W / St. Patrick St
...	...	...	...	...	...	...	...	...	...	...	...
8925737	2021-12-31	372.0	3487	Casual Member	7065.0	Dundas St E / Parliament St	12/31/2021 23:56	43.659575	-79.365769	7472.0	Dundas St E / Victoria St
8925738	2021-12-31	762.0	4195	Annual Member	7233.0	King / Cowan Ave - SMART	12/31/2021 23:56	43.637922	-79.431734	7569.0	Toronto Inukshuk Park
8925739	2021-12-31	355.0	4574	Casual Member	7065.0	Dundas St E / Parliament St	12/31/2021 23:56	43.659575	-79.365769	7472.0	Dundas St E / Victoria St

JSON Raw Data Headers

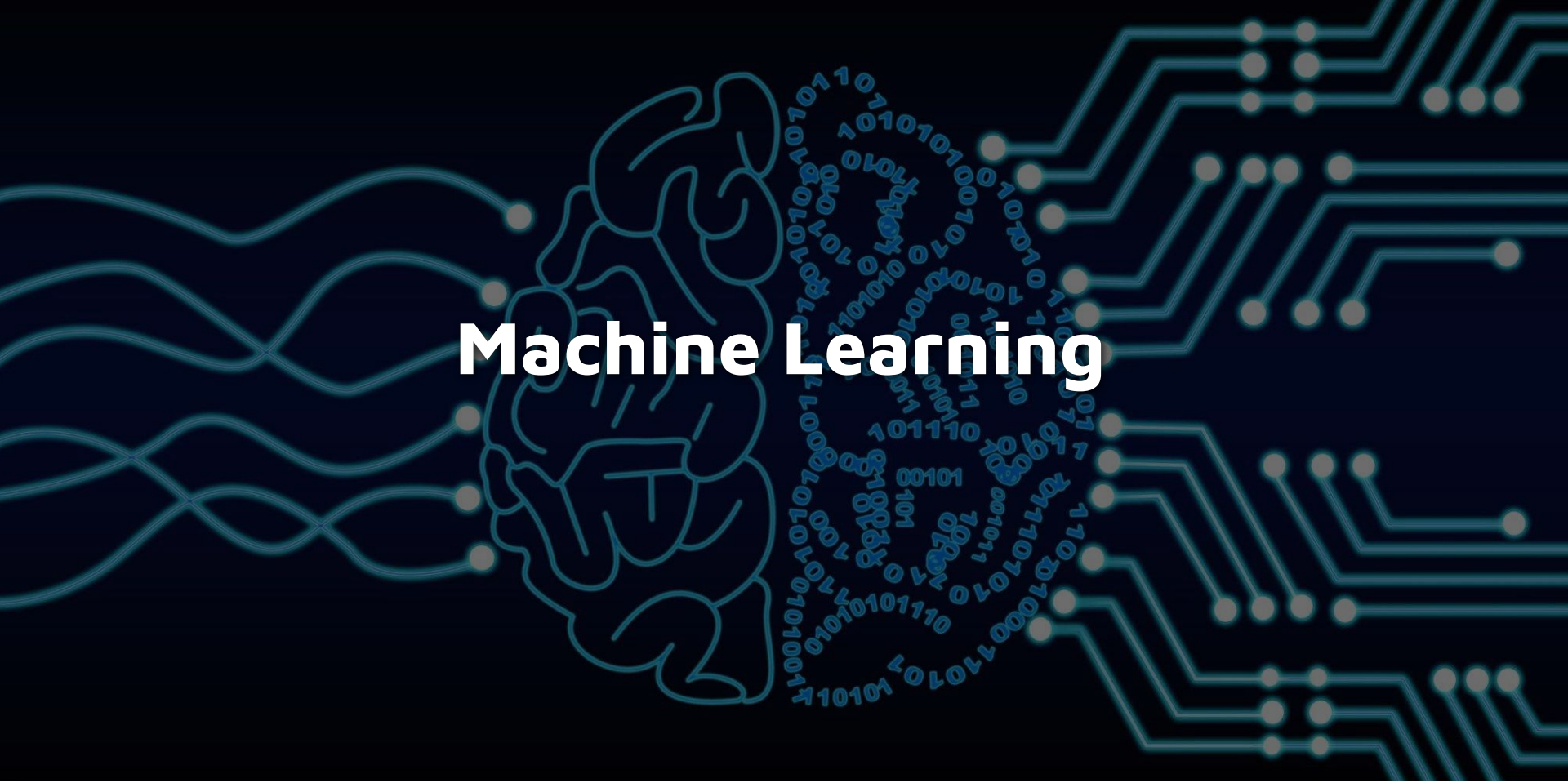
Save Copy Collapse All Expand All (slow) Filter JSON

```
last_updated:    1642905969
ttl:             30
data:
```

tbl_raw_bike_clean.csv

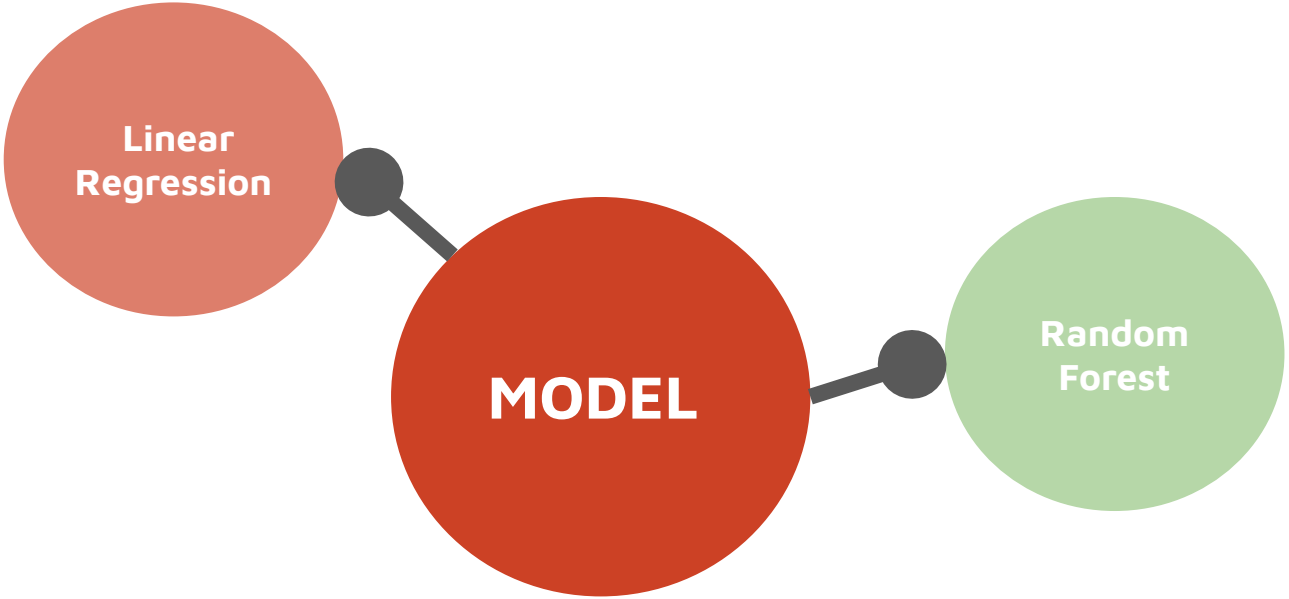
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	r_date	r_trip_dur	r_bike_id	r_membei	r_start_sti	r_start_sti	r_start_tir	r_start_lat	r_start_lo	r_end_sta	r_end_station_name	r_end_time	r_end_lat	r_end_long
2	2019-01-01	1547	1296	Annual Me	7021	Bay St / Al	01/01/201	43.65326	-79.3825	7233	King / Cowan Ave - SMART	01/01/2019 00:33	43.637922	-79.431734
3	2019-01-01	1112	2947	Annual Me	7160	King St W	01/01/201	43.64333	-79.4056	7051	Wellesley St E / Yonge St (Green P)	01/01/2019 00:29	43.6651	-79.3838
4	2019-01-01	589	2293	Annual Me	7055	Jarvis St /	01/01/201	43.66207	-79.3762	7013	Scott St / The Esplanade	01/01/2019 00:25	43.64656	-79.375274
5	2019-01-01	259	283	Annual Me	7012	Elizabeth S	01/01/201	43.65603	-79.3853	7235	Bay St / College St (West Side) - SM	01/01/2019 00:20	43.660087	-79.385655
6	2019-01-01	281	1799	Annual Me	7041	Edward St	01/01/201	43.65673	-79.3827	7257	Dundas St W / St. Patrick St	01/01/2019 00:24	43.6545174	-79.3895315
7	2019-01-01	624	661	Annual Me	7041	Edward St	01/01/201	43.65673	-79.3827	7031	Jarvis St / Isabella St	01/01/2019 00:36	43.668991	-79.379385
8	2019-01-01	604	2120	Annual Me	7041	Edward St	01/01/201	43.65673	-79.3827	7031	Jarvis St / Isabella St	01/01/2019 00:36	43.668991	-79.379385
9	2019-01-01	416	3187	Annual Me	7275	Queen St \	01/01/201	43.65228	-79.3807	7041	Edward St / Yonge St	01/01/2019 00:33	43.656729	-79.382736
10	2019-01-01	192	3026	Annual Me	7071	161 Bleec	01/01/201	43.66623	-79.3733	7311	Sherbourne St / Isabella St	01/01/2019 00:37	43.669576	-79.375961
11	2019-01-01	518	1597	Annual Me	7199	College St	01/01/201	43.65639	-79.4092	7252	Robert St / Bloor St W - SMART	01/01/2019 00:46	43.665846	-79.404998
12	2019-01-01	248	3721	Annual Me	7202	Queen St \	01/01/201	43.65167	-79.3842	7057	Simcoe St / Wellington St South	01/01/2019 00:45	43.6458569	-79.3853654
13	2019-01-01	528	291	Annual Me	7065	Dundas St	01/01/201	43.65958	-79.3658	7038	Dundas St W / Yonge St	01/01/2019 00:54	43.656094	-79.381484
14	2019-01-01	768	3534	Annual Me	7286	Gerrard St	01/01/201	43.66566	-79.3521	7047	University Ave / Gerrard St W (East	01/01/2019 00:58	43.657763	-79.389165
15	2019-01-01	1385	902	Annual Me	7134	Marlboro	01/01/201	43.68	-79.3911	7108	Front St E / Cherry St	01/01/2019 01:13	43.652686	-79.358395
16	2019-01-01	691	508	Annual Me	7192	Harbord S	01/01/201	43.66041	-79.4156	7160	King St W / Tecumseth St	01/01/2019 01:03	43.64333333	-79.40555556
17	2019-01-01	267	1477	Annual Me	7025	Ted Roger	01/01/201	43.67129	-79.3805	7044	Church St / Alexander St	01/01/2019 00:59	43.663722	-79.380288
18	2019-01-01	328	2938	Annual Me	7010	King St W	01/01/201	43.64532	-79.395	7018	Bremner Blvd / Rees St	01/01/2019 01:01	43.641529	-79.386741
19	2019-01-01	132	2533	Annual Me	7184	Ossington	01/01/201	43.65449	-79.4226	7184	Ossington Ave / College St	01/01/2019 00:59	43.6544915	-79.422634
20	2019-01-01	828	3534	Annual Me	7047	University	01/01/201	43.65776	-79.3892	7249	Dovercourt Rd / Harrison St (Green	01/01/2019 01:13	43.651145	-79.423742
21	2019-01-01	575	2533	Annual Me	7184	Ossington	01/01/201	43.65449	-79.4226	7046	Niagara St / Richmond St W	01/01/2019 01:09	43.64534	-79.409597

tbl_raw_bike_clean



Machine Learning

Machine Learning Model



Feature(s)

Possible Outcome

- Trip Duration
- Count Bikes
- Count Trips

Independent Features

- Average Temp
- Average Wind Speed
- Wind Gust
- Air Pressure
- Snow Depth
- Average Humidity
- Average Dew Point

Preliminary Features Selection Linear Regression

R^2=66.16%

MAE:2898617.81
MSE: 19112705117582.13
RMSE: 4371807.99
Overall Model Score: 60.98%

y: Trip Duration
X: avg_temp, avg_wind, wind_gust, air_pressure, snow, avg_humid, avg_dp

R^2=75.84%

MAE: 433.93
MSE: 284447.26
RMSE: 533.34
Overall Model Score: 75.02%

y: Count Bikes
X: avg_temp, avg_wind, wind_gust, air_pressure, snow, avg_humid, avg_dp

R^2=66.16%

MAE:2898617.81
MSE: 19112705117582.13
RMSE: 4371807.99
Overall Model Score: 60.98%

y: Count Trips
X: avg_temp, avg_wind, wind_gust, air_pressure, snow, avg_humid, avg_dp

Preliminary Features Selection Random Forest

R^2=95.02%

MAE: 11048141.50
MSE: 2810649367460.8
RMSE:1676499.14
Overall model score: 62.84%

y: Trip Duration
X: avg_temp, avg_wind, wind_gust, air_pressure, snow, avg_humid, avg_dp

R^2=96.38%

MAE: 160.38
MSE: 42654.64
RMSE:206.53
Overall model score: 78.48%

y: Count Bikes
X: avg_temp, avg_wind, wind_gust, air_pressure, snow, avg_humid, avg_dp

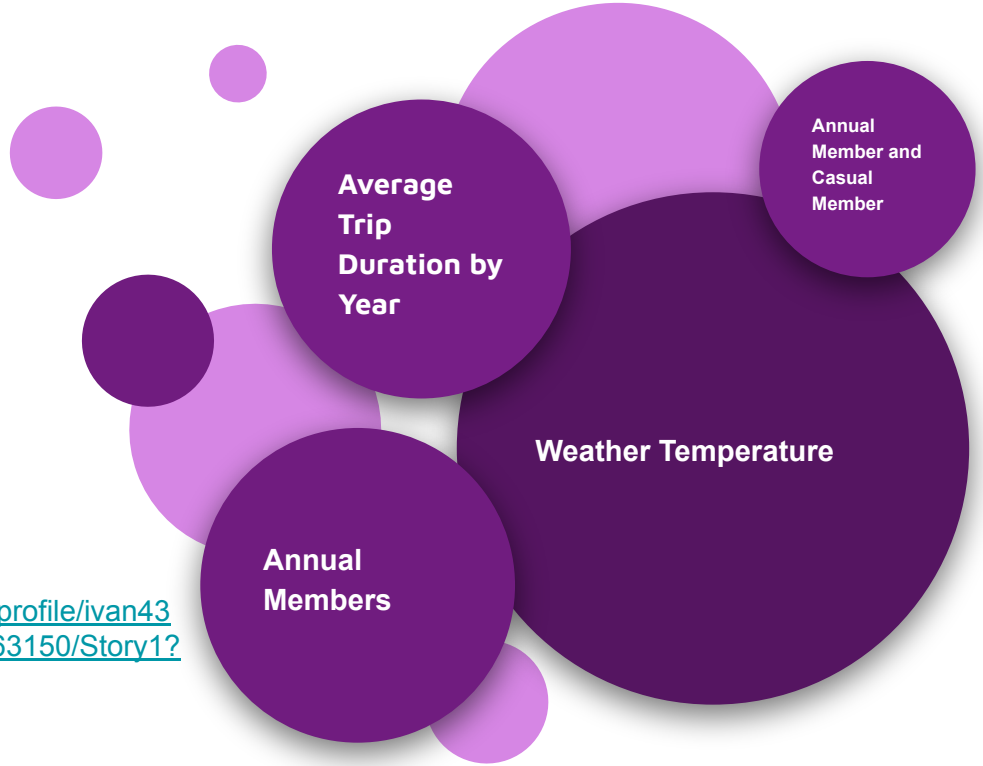
R^2=95.02%

MAE: 11048141.50
MSE: 2810649367460.8
RMSE:1676499.14
Overall model score: 62.84%

y: Count Trips
X: avg_temp, avg_wind, wind_gust, air_pressure, snow, avg_humid, avg_dp

Visualization

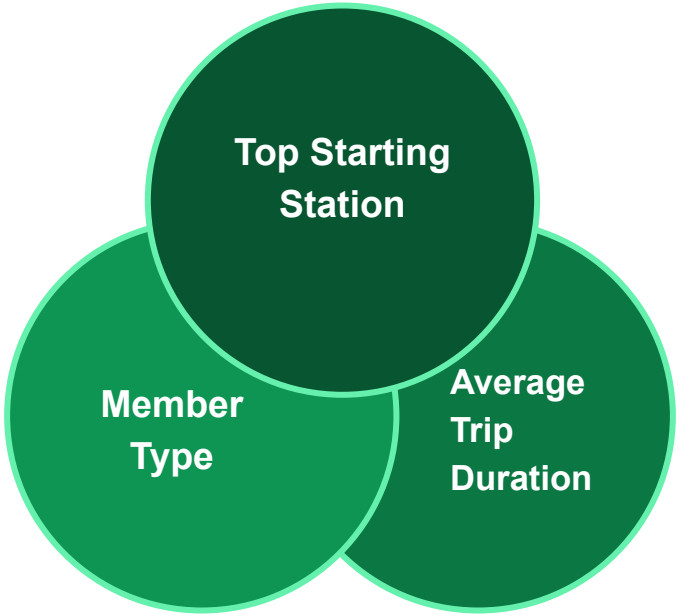
Tableau



LINK :

https://public.tableau.com/app/profile/ivan4393/viz/Dashboard_16428543063150/Story1?publish=yes

Tableau



LINK :

https://public.tableau.com/app/profile/ivan4393/viz/ProjectRawData/Story1?publish=yes

Website

Data Analytics Bootcamp UofT

Project Group 7

Participants: Dana Du, Inez Suyono, Ivan Coelho, Shohesh Patel

Project Scope:
Location : This Project is based in Toronto Time Range : 3 years history from 1 January 2019 to 31 December 2021

Resources:
Data Source Bike Sharing Datasets: Downloaded from an open-source portal CKAN (bike)
Weather Datasets: Scraped from Wunderground (link) and download from Meteostat (link)

Tools:
Software: Jupyter Notebook, PostGreSQL, Parsehub
Language: Python, SQL
Library: Pandas, Glob, Os, Sklearn
Vizualization: Tableau, HTLM, CSS

Bike Share Toronto

Bike sharing is a shared transport service using bike on a short term for a price. The sturdy-framed bikes are available at any docking station in the city. The bikes can be taken from any station and returned to any station in the bike share system. Riders use bike share for commuting to work or leisure—like running errands, going to appointments or meeting up with friends. Riders also can use bike to connect to public transportation or just doing exercise for exploring the city.

Weather conditions have considerable influence on cycling travel behavior. Our goal in this project is to create a viable machine learning model to explore possible correlation(s) between the different types of weather conditions and the demand on bike sharing.

bike2021dec

Trip Id	Trip Duration	Start Station Id	Start Time	Start Station Name	End Station Id	End Time	End Station Name	Bike Id	User Type
14635201	669	7121	12/01/2021 00:00	Jarvis St / Dundas St E	7467	12/01/2021 00:11	Lower Simcoe St / Bremner Blvd	2364	Annual Member
14635200	274	7216	12/01/2021 00:00	Wellington St W / Stafford St	7533	12/01/2021 00:04	Housey St / Dan Leckie Way	5451	Annual Member
14635202	933	7267	12/01/2021 00:00	Dundas St E / Pembroke St - SMART	7399	12/01/2021 00:16	Lower Jarvis / Queens Quay E	1629	Annual Member
14635203	811	7530	12/01/2021 00:01	Sherbourne St N / Elm Ave	7246	12/01/2021 00:14	Yonge St / Bloor St	354	Annual Member
14635204	918	7127	12/01/2021 00:01	Bay St / Scollard St	7642	12/01/2021 00:17	Yonge St / St Clair Ave	1385	Annual Member
14635205	437	7028	12/01/2021 00:02	Gould St / Mutual St	7508	12/01/2021 00:09	Berkeley St / Dundas St E - SMART	6479	Annual Member
14635206	935	7250	12/01/2021 00:02	St. George St / Russell St - SMART	7149	12/01/2021 00:18	Yarmouth Rd / Christie St	4659	Annual Member