

Proof of Success - CS542 Common Task

This report was created to state evidence of the effectiveness of the created trading tool (*TradingTool.ipynb*). In particular, it will be shown how the obtained minute temperatures are actual temperature occurrences, and why their use (with Strategy 2) provides a significant advantage over trading with hourly data (as done with Strategy 1). Additionally, some screenshots of the trader user page at kalshi.com will be provided to demonstrate the profitability of using the built tool to trade in the mentioned site.

Minute Temperatures

First, the ability of obtaining real minute temperatures is checked:

Weather observations for the past three days

Chicago, Chicago Midway Airport

Enter Your "City, ST" or zip code Go

metric

Date	Time (cdt)	Wind (mph)	Vis. (mi.)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill (°F)	Heat Index (°F)	Pressure		Precipitation (in.)		
						Air	Dwpt	6 hour Max.	6 hour Min.				altimeter (in)	sea level (mb)	1 hr	3 hr	6 hr
03	18:53	S 7	10.00	Partly Cloudy	SCT250	84	54	87	83	36%	NA	83	30.01	1015.5			
03	17:53	S 7	10.00	Partly Cloudy	SCT250	85	54			35%	NA	84	30.02	1015.5			
03	16:53	S 14	10.00	A Few Clouds	FEW250	86	53			32%	NA	84	30.02	1015.7			
03	15:53	SW 14 G 22	10.00	A Few Clouds	FEW250	87	53			31%	NA	85	30.03	1016.0			
03	14:53	S 12	10.00	A Few Clouds	FEW250	86	54			33%	NA	84	30.05	1016.7			
03	13:53	S 13 G 24	10.00	A Few Clouds	FEW250	85	53			33%	NA	83	30.08	1017.5			
03	12:53	S 8 G 24	10.00	A Few Clouds	FEW250	84	56	85	65	38%	NA	83	30.11	1018.5			

CDT timezone

Jupyter MinutelyTemps_Historical.csv Last Checkpoint: yesterday

File Edit View Settings Help

Delimiter: ,

	Date	Time	Temperature
42	2023-10-03	15:19:03	76.59
43	2023-10-03	15:20:04	76.53
44	2023-10-03	15:22:04	76.57
45	2023-10-03	18:14:11	84.43
46	2023-10-03	18:30:17	84.6
47	2023-10-03	18:32:17	84.67
48	2023-10-03	18:33:18	84.72
49	2023-10-03	18:35:18	84.74
50	2023-10-03	18:37:18	84.76
51	2023-10-03	18:38:19	84.74
52	2023-10-03	18:40:19	84.78
53	2023-10-03	18:42:20	84.78
54	2023-10-03	18:44:20	84.78
55	2023-10-03	18:49:18	84.85
56	2023-10-03	18:51:19	84.99
57	2023-10-03	18:53:19	85.01
58	2023-10-03	18:55:19	84.99
59	2023-10-03	18:57:20	85.03

UTC timezone (corresponds to CDT+5)

Please note: 13:53 CDT (time in the Chicago Midway Airport as reported by the NWS) = 18:53 UTC (time as reported by OpenWeather)

The first picture is a screenshot of [this page](#), which shows the hourly temperature data for the past 3 days. The second screenshot corresponds to a dataset that was built by sequentially calling [this API](#).

The obtained minute temperatures being actual temperatures implies that the trading tool's strategy 2 is thus reliable. In fact, the next evidence shows how this trading strategy, having no risk associated (as it is based on observed data rather than predictions), **exceeds the effectiveness of hourly-data-based trading**.

This can be illustrated with a real example. On 10/10/2023 at 10:00 AM, [forecast data](#) from the National Weather Service (obtained via API) indicated that the maximum temperature for the day was 60 degrees.

Today's maximum temperature in Chicago Midway Airport is 60

[6]:

	Date	Time	Temperature
0	2023-10-10	11:00:00	55
1	2023-10-10	12:00:00	57
2	2023-10-10	13:00:00	58
3	2023-10-10	14:00:00	59
4	2023-10-10	15:00:00	60
5	2023-10-10	16:00:00	60
6	2023-10-10	17:00:00	59
7	2023-10-10	18:00:00	58
8	2023-10-10	19:00:00	57
9	2023-10-10	20:00:00	56
10	2023-10-10	21:00:00	53
11	2023-10-10	22:00:00	53
12	2023-10-10	23:00:00	51

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS

View Location Examples

Your local forecast office is **Chicago, IL**

Bolaven Moving Away from the Mariana Islands; States
Typhoon Bolaven was slowly moving away from the Mariana Islar showers and thunderstorms, along with heavy rainfall threats, for Mexico is forecast to bring some heavy rainfall from the Deep Soi

Hazardous Weather Conditions

- Hazardous Weather Outlook
- Hydrologic Outlook

En Español

Current conditions at
Chicago, Chicago Midway Airport (KMDW)
Lat: 41.78°N Lon: 87.76°W Elev: 617ft.

Mostly Cloudy
61°F
16°C

Humidity 34%
Wind Speed W 13 G 20 mph
Barometer 29.78 in (1008.6 mb)
Dewpoint 32°F (0°C)
Visibility 10.00 mi
Last update 10 Oct 1:53 pm CDT

However, at 1:53 PM, current data from the National Weather Service (same data source as the forecasts) showed that the temperature was 61 degrees (thus exceeding the expected maximum temperature of 60 degrees):

This, in fact, was aligned with the minute temperatures recorded in the self-created database (used for Strategy 2).

29	2023-10-10	19:00:36	60.42
30	2023-10-10	19:01:53	60.53
31	2023-10-10	19:03:12	60.69
32	2023-10-10	19:04:28	60.71
33	2023-10-10	19:05:29	60.76
34	2023-10-10	19:06:37	60.76
35	2023-10-10	19:07:54	60.76
36	2023-10-10	19:09:13	60.8
37	2023-10-10	19:10:30	60.82


Please note: 19:00 UTC (time as reported by OpenWeather) = 14:00 CDT (time in the Chicago Midway Airport as reported by the NWS)

Trading Report

The complete record of trades for the past weeks can be found at *TradingTool.ipynb* > *Trading Report*. Here, some examples will be provided to illustrate the evolution of profitability during the past weeks (while the tool was being built).

Week 1 - Manual trades

Week 2 - Trades based on predictions (forecasts of daily maximum temperature using hourly data)

	date	time	max_temp	uvi	humidity	rain	
0	2023-09-28	17:00:00	66.99	2.53	49	3.43	Market ↑ Qty ↑
1	2023-09-29	17:00:00	66.67	5.15	91	6.87	 High temp in Chicago On Sep 28, 2023
2	2023-09-30	17:00:00	75.97	5.36	53	0.00	66° to 67° 1000
3	2023-10-01	17:00:00	78.15	5.27	42	0.00	
4	2023-10-02	17:00:00	80.56	6.00	40	0.00	

```
[11]: today_temp_forecast = hourly_temps_forecast[hourly_temps_forecast["Date"] == datetime.now().date()]
print("Today's maximum temperature in Chicago Midway Airport is ", max(today_temp_forecast["Temperature"]))
today_temp_forecast
```

Today's maximum temperature in Chicago Midway Airport is 71

```
[11]:
```

	Date	Time	Temperature
0	2023-10-05	14:00:00	70
1	2023-10-05	15:00:00	71
2	2023-10-05	16:00:00	71
3	2023-10-05	17:00:00	71
4	2023-10-05	18:00:00	69
5	2023-10-05	19:00:00	67
6	2023-10-05	20:00:00	66
7	2023-10-05	21:00:00	66
8	2023-10-05	22:00:00	65
9	2023-10-05	23:00:00	64



High temp in Chicago
On Sep 29, 2023

74° to 75°

810

Week 3-4 - Automatic trades (via Kalshi's API) based on predictions (using minutely data)

Portfolio						
\$11,290.62						
↑\$1,159.70 (11.45%) today						
\$10,091.62 in funds						
<div>49.00 of 50K volume</div> <div>Unlock .625% dollar rebate</div>						
Position Resting Closed						
Market ↑	Qty ↑	Last traded ↑	Unrealized ↑	Avg ↑	Cost ↑	Closing in ↑
High temp in Chicago On Oct 12, 2023						ROI \$1,160.00
59° to 60°	3980	Yes 30¢	\$1,154.20 (2900%)	--¢	\$39.80	1 day
61° to 62°	500	Yes 1¢	\$0.00	--¢	\$5.00	1 day
Total			\$1,154.20 (2576%)		\$44.80	