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To: /content/Python Application Usage Log Data Set.xlsx

100%|██████████| 1.68M/1.68M [00:00<00:00, 54.3MB/s]

INFO:prophet:Making 28 forecasts with cutoffs between 2017-09-08 00:00:00 and 2024-05-04 00:00:00

100%

28/28 [00:05<00:00, 3.75it/s]

[Grid 1] completed with cfg={'changepoint_prior_scale': 0.2, 'seasonality_prior_scale': 10, 'regressor_prior_scale': 0.5} (CV rows=1460)

INFO:prophet:Making 28 forecasts with cutoffs between 2017-09-08 00:00:00 and 2024-05-04 00:00:00

100%

28/28 [00:09<00:00, 2.21it/s]

[Grid 2] completed with cfg={'changepoint_prior_scale': 0.5, 'seasonality_prior_scale': 10, 'regressor_prior_scale': 1.0} (CV rows=1460)

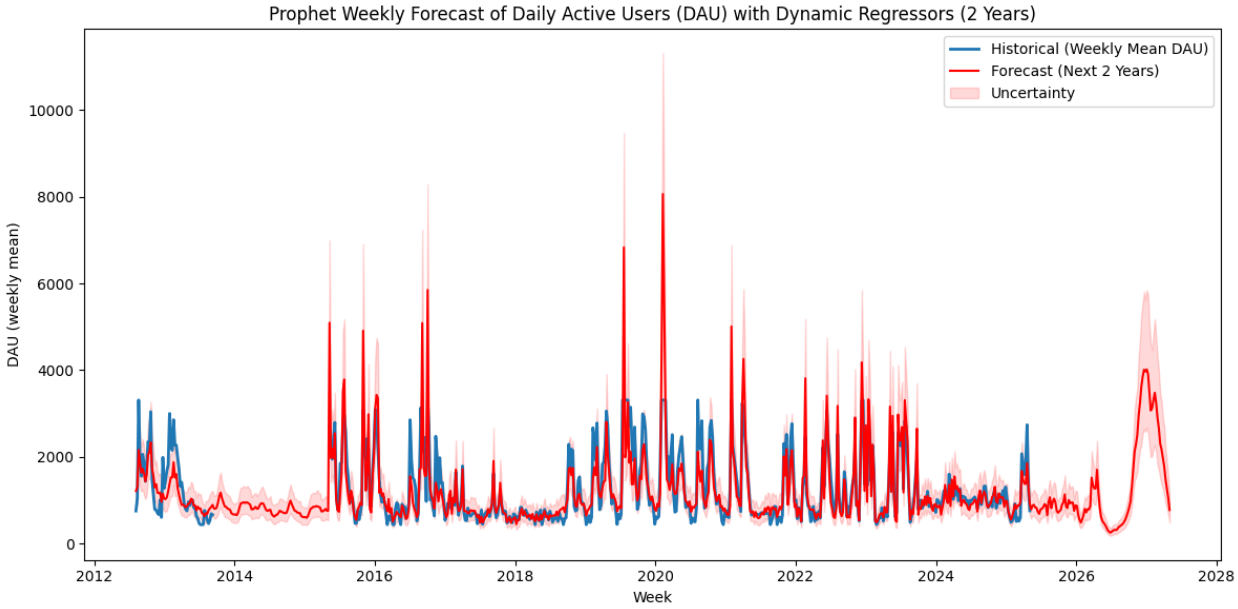
INFO:prophet:Making 28 forecasts with cutoffs between 2017-09-08 00:00:00 and 2024-05-04 00:00:00

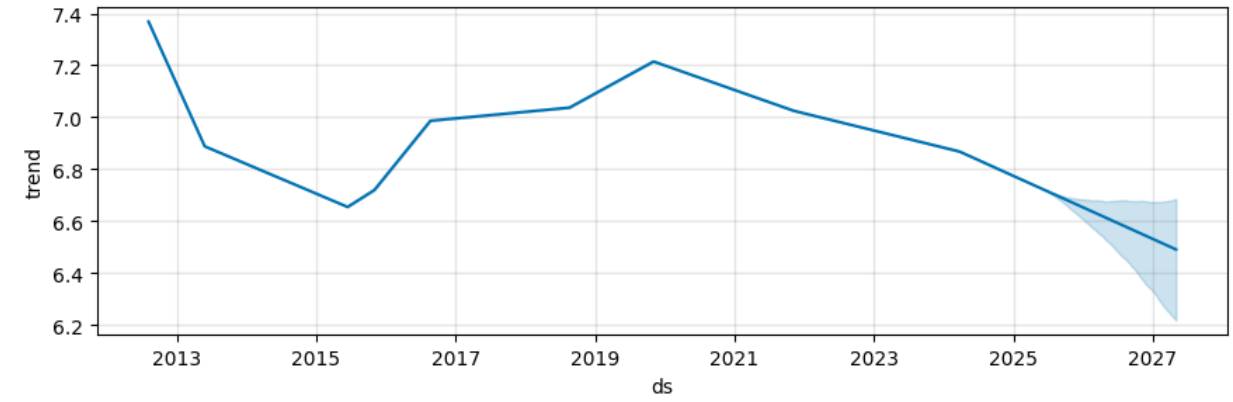
100%

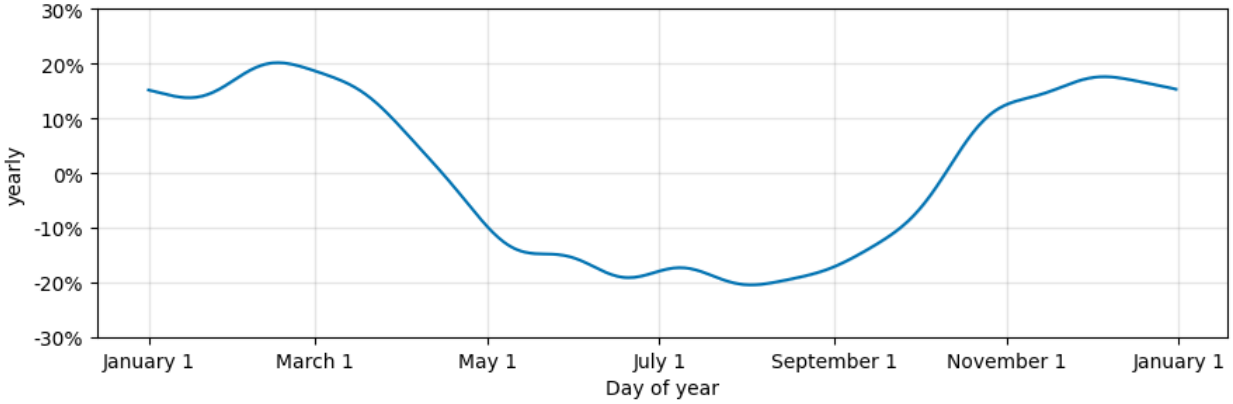
28/28 [00:13<00:00, 1.71it/s]

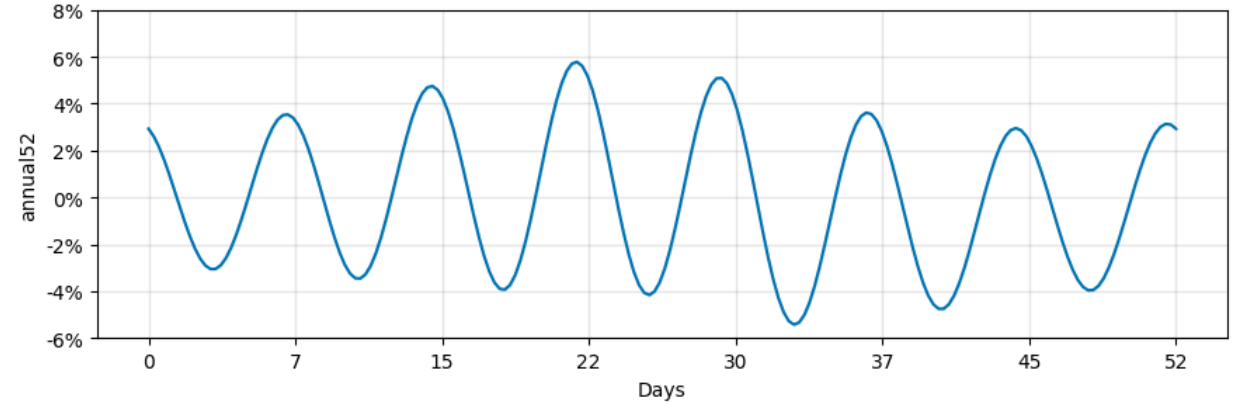
[Grid 3] completed with cfg={'changepoint_prior_scale': 1.0, 'seasonality_prior_scale': 15, 'regressor_prior_scale': 1.0} (CV rows=1460)

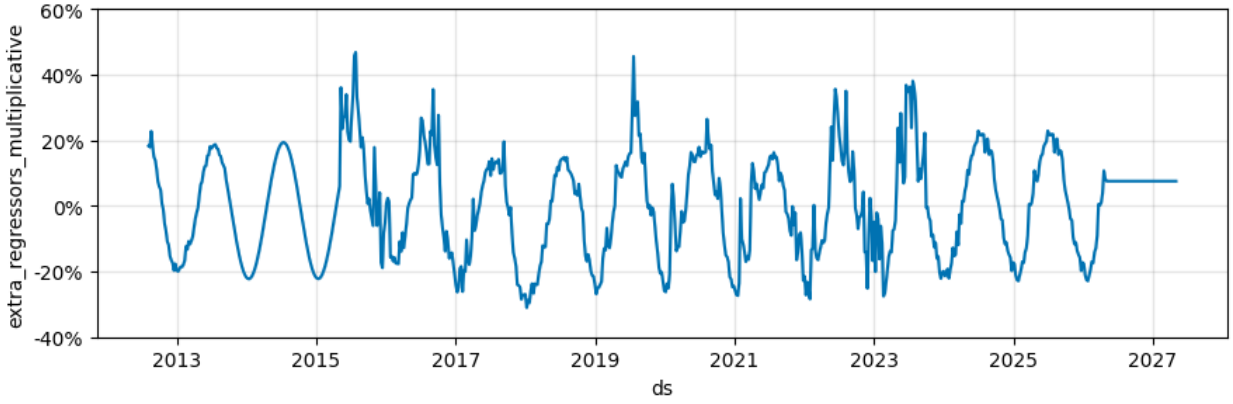
Selected config: {'changepoint_prior_scale': 0.2, 'seasonality_prior_scale': 10, 'regressor_prior_scale': 0.5}


Prophet Weekly Forecast of Daily Active Users (DAU) with Dynamic Regressors (2 Years)
Historical (Weekly Mean DAU)
Forecast (Next 2 Years)
Uncertainty
DAU (weekly mean)
Week
0
2000
4000
6000
8000
10000
2012
2014
2016
2018
2020
2022
2024
2026
2028


trend
7.4
7.2
7.0
6.8
6.6
6.4
6.2
2013
2015
2017
2019
2021
2023
2025
2027
ds


yearly
30%
20%
10%
0%
-10%
-20%
-30%
January 1
March 1
May 1
July 1
September 1
November 1
January 1
Day of year


annual52
8%
6%
4%
2%
0%
-2%
-4%
-6%
0
7
15
22
30
37
45
52
Days


extra_regressors_multiplicative
60%
40%
20%
0%
-20%
-40%
2013
2015
2017
2019
2021
2023
2025
2027
ds

=== Prophet Cross-Validation Accuracy (original DAU scale) ===

Accuracy (100 - MAPE): 62.60%

MAPE: 37.40% sMAPE: 41.67%

MAE: 474.533 RMSE: 888.112 R^2: -0.297

MASE (vs naive-1): 1.197

Directional Accuracy: 69.66%

	ds	yhat_inv	yhat_lower_inv	yhat_upper_inv
762	2027-03-14	2307.509629	1508.496946	3466.267396
763	2027-03-21	2172.026051	1368.050860	3271.514262
764	2027-03-28	1979.869894	1275.646263	2906.276463
765	2027-04-04	1783.069575	1113.903465	2713.730095
766	2027-04-11	1483.879585	929.886266	2181.535989
767	2027-04-18	1269.351031	810.871535	1875.856200
768	2027-04-25	1052.859719	671.431849	1562.930729
769	2027-05-02	775.310254	486.146902	1131.327531