OPERATION ANALYTICS AND INVESTIGATING METRIC SPIKE

UTKARSH ANANT

- Project Description
- Approach
- Tech-Stack
- Insights
- Result
- Project Link

PROJECT DESCRIPTION

- Objective of this project is to conduct operation analytics to identify areas of improvement in a company and investigate metric spikes to answer daily questions.
- The areas of analysis include throughput, jobs reviewed over time and other information such as share of each language.
- User engagement, growth and retention is analyzed for the app and other services such as the email.
- Insights will help the company predict overall growth or decline, improve automation, cross-functional teams' understanding, and workflow effectiveness.

APPROACH

PLAN | PREPARE | PROCESS | ANALYZE | ACT | SHARE

The project was completed in several steps. First, I understood the tasks and identified the necessary data sources and tools for analysis. Next, I prepared by installing and updating the required technology stack and connecting to the database. In the processing stage, I understood the structure of data and broke down the tasks into elementary operations. Next, I understood the metrics associated with each task. I then used SQL and Python to perform the analysis in the action stage. Finally, I shared the analysis report by creating a PDF document and linking to the Jupyter notebook containing the analysis.

TECH - STACK : Main Tools

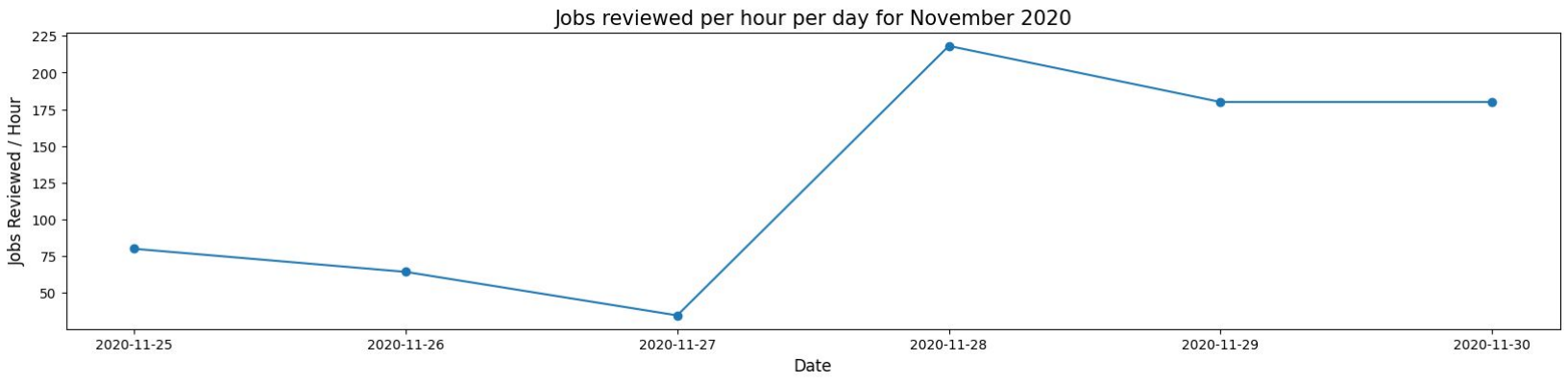
TOOL	VERSION	USE
Python	3.9.13	Programming language used query MySQL database
VS Code	1.76.2	IDE to run Jupyter notebook server
MySQL Server	8.0.32	Server to store database and query it
MySQL Workbench	8.0 CE	Used to visualize the database
Git	2.40.0	Used for version control and track changes.

TECH - STACK : Python Libraries

TOOL	VERSION	USE
my-sql-connector	8.0.32	Connects to MySQL Server
pandas	1.5.3	Data analysis, manipulation and visualization
numpy	1.23.5	Working with arrays
matplotlib	3.7.1	Plots graphs and figures for data visualization
math	-	Provides access to mathematical functions

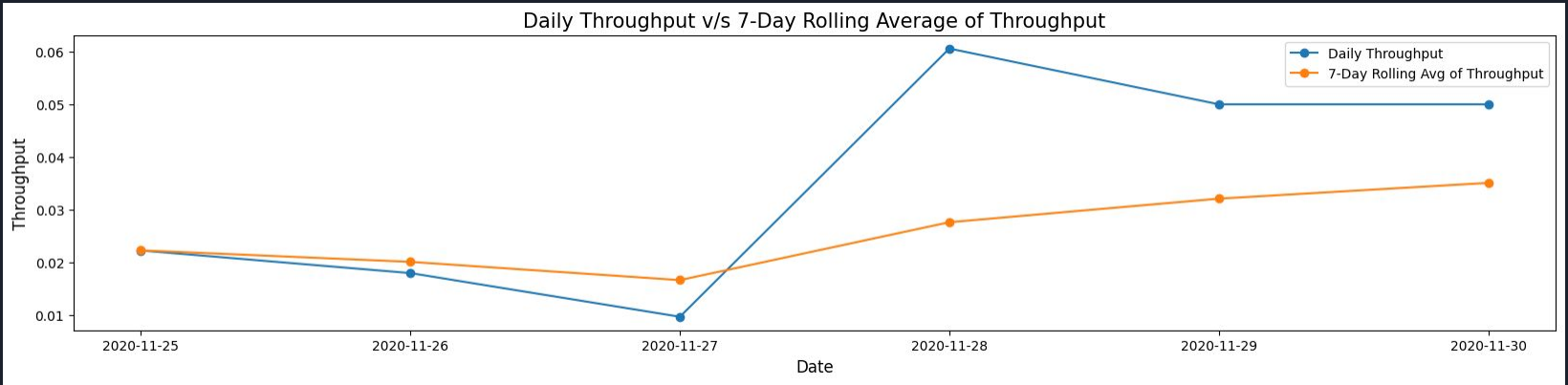
INSIGHTS

Number of jobs reviewed



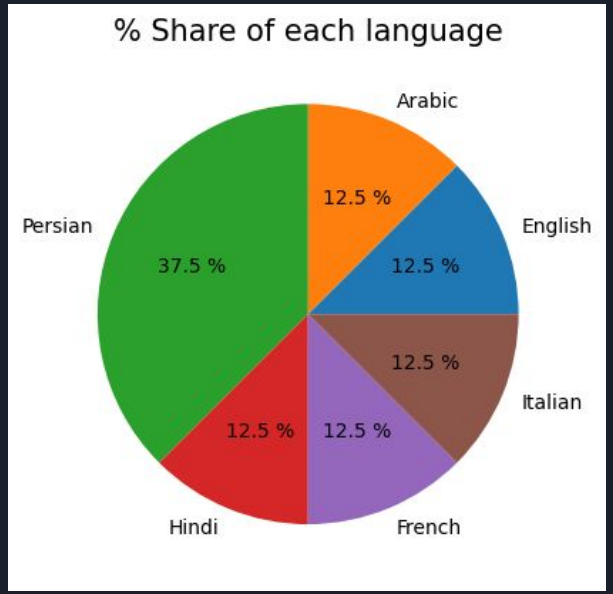
- On an average, 126 to 127 jobs are reviewed per hour per day for November 2020.
- 6 times increase in the jobs reviewed is observed after November 27, 2020.

Throughput



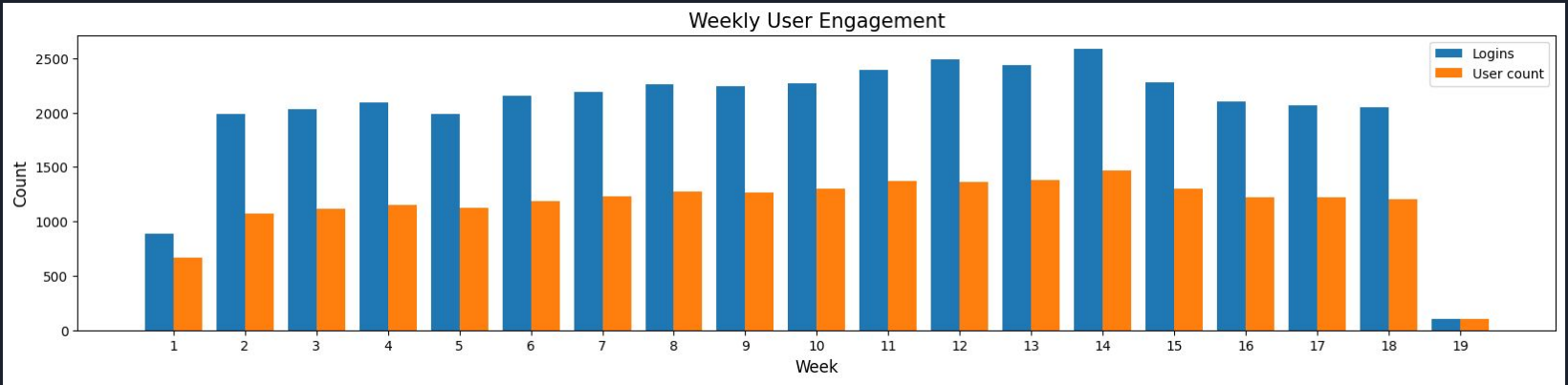
- A 7-day rolling average helps to smooth out daily variations in throughput, providing a more consistent view of performance over time.
- The rolling average shows an increasing trend of the throughput.

Percentage share of each language



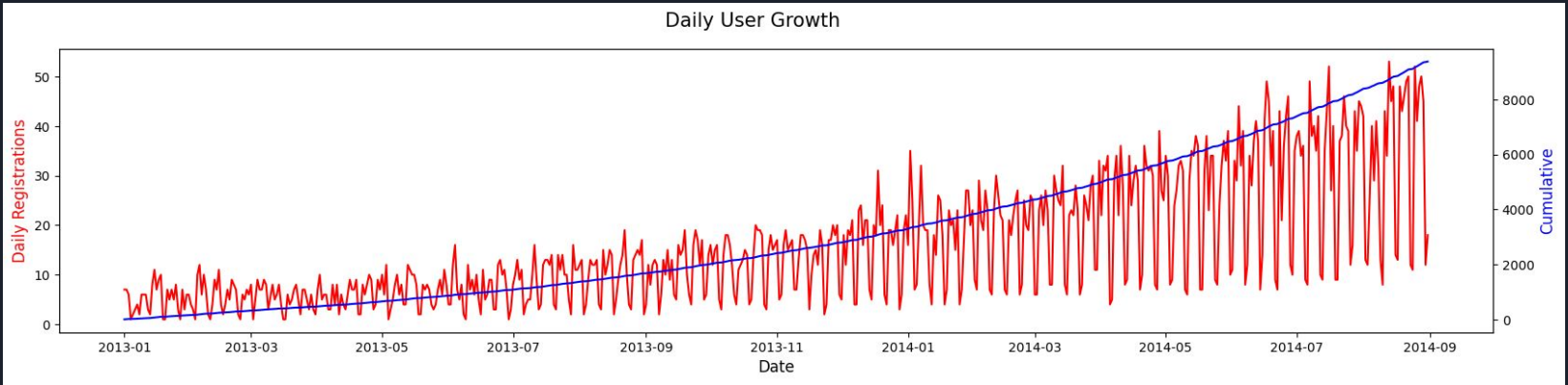
- Persian language has the highest share of 37.5 %.
- All other languages have the same share of 12.5%

Weekly user engagement



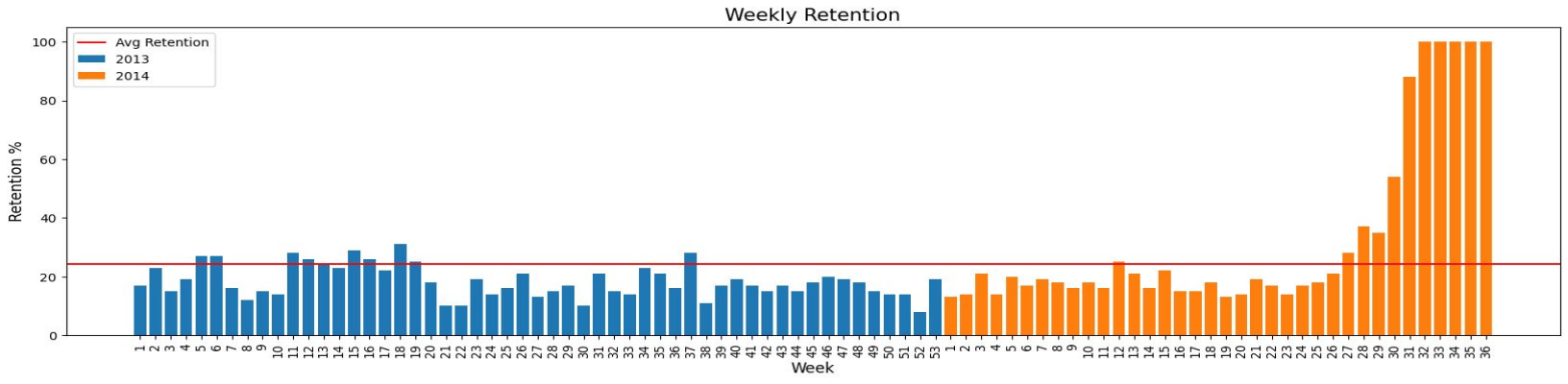
- Logins show the number of logins for each week.
- User counts displays the active users.
- More number of logins than the active users show high user engagement indicating that users login multiple times during a day.

User growth



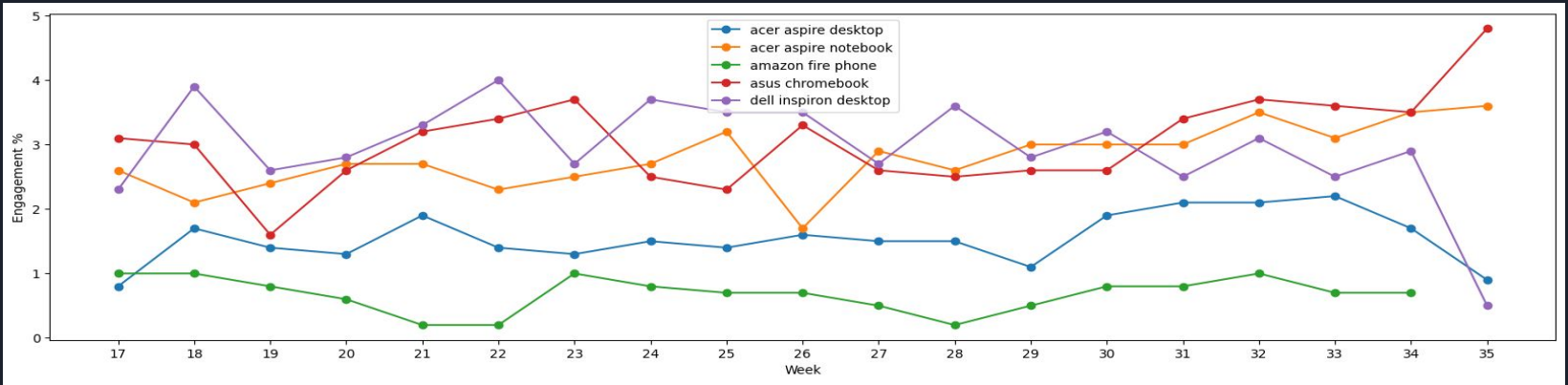
- The trend demonstrates consistent growth.
- However, the growth trajectory does not seem to be exponential and may require a considerable amount of time to reach a massive audience.

Weekly retention



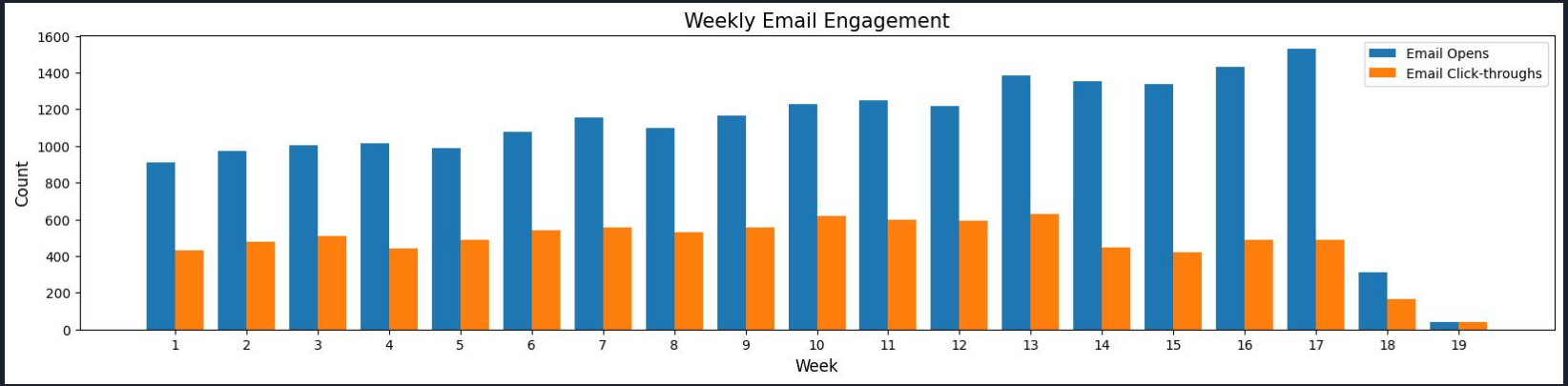
- The average user retention rate is 24.4%.
- The retention values for the past few weeks are relatively high due to their proximity to the month against which retention is measured.
- Weeks with 100% retention match the month against which retention is measured.

Weekly engagement



- The total number of devices is 23, but only the first 5 are displayed for clarity purposes.
- The Dell Inspiron desktop appears to be the most frequently used device, but its engagement decreases towards the end of the period.
- The usage of Amazon Fire Phone is consistently low throughout the period.

Email engagement



- The email service is accessed frequently by users. However, it appears that only half of them actually click on the links provided.

RESULT

- Gained hands-on experience in working with complex datasets and deriving insights from them using SQL queries.
- Developed skills in data analysis, problem-solving, and critical thinking by answering various business questions related to job data and investigating metric spikes.
- Gained insights into the operational aspects of a company, including throughput, user engagement, user growth, retention, and service engagement.
- Developed an understanding of the importance of operation analytics and investigating metric spikes for a company's growth and success, and gained the ability to communicate insights and findings to different teams effectively.

PROJECT LINK