

Facebook Timeline

¹Nagesh Mapari,²Suraj Yashwant Pawar, ³Tarique Uzair Mohd Farooque, ⁴Kapil Rameh Avasarmol, ⁵Shuham Shete

¹Assistant Professor Department Of Information Technology,

^{2,3,4,5} Student Of B.E Information Technology, Department Of Information Technology, Anuradha Engineering College, Chikhli, Maharashtra, India

²surajytpawar@gmail.com, ³mohdtarique376@gmail.com, ⁴kapilavasarmol@gmail.com, ⁵srshete2402@gmail.com,

Abstract.

Facebook Timeline is one of the most widely used and complex social networking features, allowing users to share and view updates, photos, and videos. But have you ever wondered what powers this feature behind the scenes? This seminar will explore the architecture behind Facebook Timeline, discussing the key components, technologies, and design decisions that enable this scalable and performant system. We will delve into the database schema, data modeling, and query optimization techniques used to store and retrieve vast amounts of user data. Additionally, we will examine the role of front-end technologies, caching mechanisms, and content delivery networks in delivering a seamless user experience. Join us to gain insight into the technical foundations of Facebook Timeline and learn from the engineering expertise that makes it possible.

INTRODUCTION.

September 29, 2011 is no longer Facebook Timeline day. A lawsuit involving the name "Timeline" has delayed the full launch. -ts) September 29, 2011 is Facebook Timeline day

The new layout for the social networking giant will be pushed live to all users and the Internet as we know it is probably going to change forever. Timeline marks the biggest update to Facebook's design ever and considering the backlash the Facebook team receives for even the smallest of changes, I won't be surprised if the reaction to Timeline reaches never-before-seen levels of vitriol. Already, their blog post announcing Timeline has been trolled to oblivion and the introduction video already has over 2,000 dislikes on YouTube.

What is facebook timeline?

Facebook Timeline is like your digital scrapbook on the platform, a curated space where you can post updates, share photos, and mark significant life events. Think of it as a two-part visual collage. The top section showcases your profile picture and cover photo, giving people a snapshot of who you are.

Your profile picture is that small image people see next to your posts and comments. The cover photo is a larger background image where you can flaunt your interests, personality, or even a memorable moment.

Whether it's an old memory you're fond of or a future event you're excited about. Your timeline is where you can share it all, keeping everyone in the loop.

Cover photos are breathtaking



One of the drawbacks to Facebook's old designs was the lack of personalization. Giving all profiles the same basic look was a big upgrade from the eyesore that Myspace turned into, but letting users make their profiles their own was a needed upgrade. Cover photos add an emotional and personal touch to each profile without letting things get out of control

As mentioned in their F8 Conference, one of Facebook's main goals now is to increase user engagement with the site. Huge, personal photos on prominent areas of the site are going to increase the emotional ties and nostalgia that Facebook offers. It's one of the best additions that Timeline offers.

About those crazy college photos



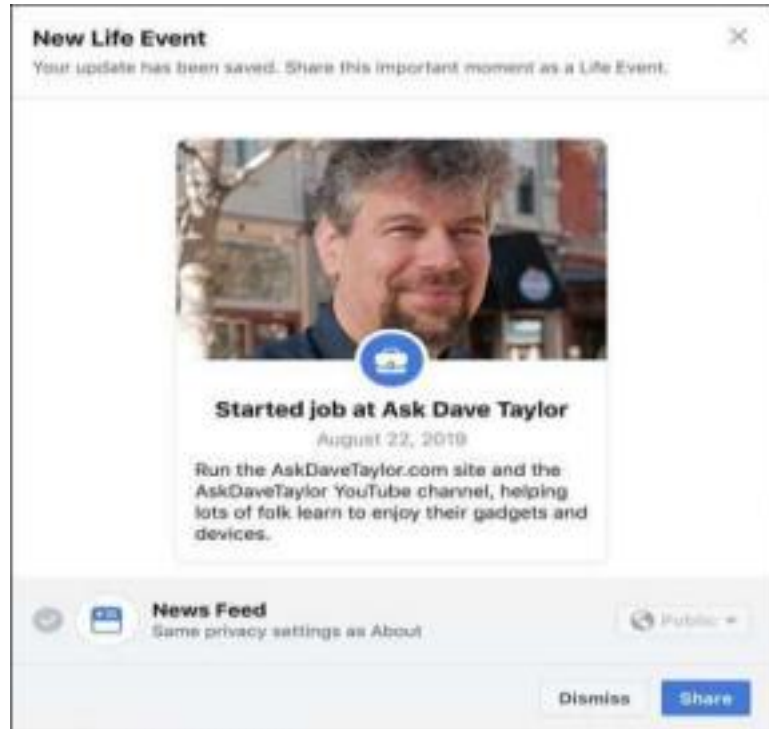
Photos by andres rodriguez

One of the keys to the Timeline design is a year-by-year breakdown of your posts to Facebook and easy access to historical data. Facebook gave a sneak peek of this feature by beginning to integrate —On this day! posts several months ago. It only takes a click to look at every single one of someone's posts from 2009, for example, which can be good and bad.

It's interesting to see what I was posting in college and a lot of awesome memories came flooding back when I scrolled through my old posts. There are, however, a lot of things that people will regret posting. Even seeing photos of of you and an ex from a few years ago can be pretty awkward.

One of the nice things about the old Facebook design is that it was easy to forget about what you posted a year or even a month ago. Timeline brings all of that back in a major way. Be prepared to spend some time tidying up your Timeline.

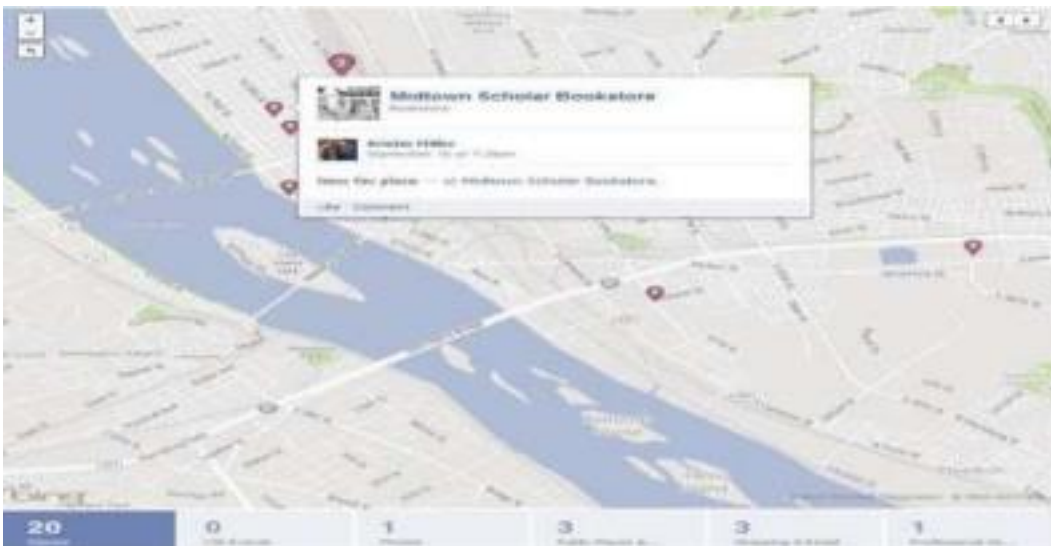
Facebook life event



There is a new series of built-in updates tailored specifically to major life events. Instead of posting a status update about a new job, a graduation or a new pet, you can use one of Facebook's integrated options. This is a cool way to track and graph out major events, but some of the options are definitely a little creepy.

Facebook has integrated updates for —Lost a loved one‡ and —Had a surgery.‡ I'm sure some people will make use of these, but, for me, some major life events are a little too personal to highlight on Facebook.

Location, location



Remember all of the check-ins you made on Facebook places? They now have a prominent place right on the top of your Facebook profile. The new Bing-integrated maps show all of your location check-ins, geo-tagged photos and any other updates with a location attached to them. By featuring maps alongside friends, tagged photos and likes, Facebook is encouraging users to not only —check in! but to add the location of a status update, a photo, a video or an event.

Facebook's timeline will impact your career

The advent of Facebook's new Timeline feature gives you, your colleagues, and your customers a whole new set of reasons to share your moment-by-moment news, photos, and reflections. Instead of a flat list of stories on your wall, and a glob of biographical data on your profile, the new Timeline creates a visually attractive story of your life dating all the way back to the date of your (reported) birth. If and when Timeline gets rolled out to Pages (as Facebook is already hinting), we will see brand presences change in much the same way: into dynamic, chronological, and visual stories.

But the business impact of Timeline will be felt long before it arrives on brand pages. As Timeline rolls out on individual profiles, anyone who has both a professional career and a Facebook account will have to rethink the relationship between them. Timeline is going to change the way Facebook interacts with our professional lives. Here are the changes to watch for — and the ways you can make them work for you instead of against you.

Facebook Timeline and Your Marketing Strategy

Facebook marketing is the act of promoting a business or brand and its products/services via a Facebook business Page. By fully optimizing these business Pages, brands create a second website of sorts, where you can advertise and sell products and services directly to your target audience. Facebook's ad platform enables you to go beyond organic promotion, creating paid posts in various post types (i.e., photos, carousels, videos, links) to maximize engagement.

Thus, with a well-planned strategy, you can use Facebook to support the full customer experience from awareness to purchase and loyalty.

To get to the heart of mastering Facebook marketing, you really have to understand the big game player: Facebook's algorithm. It's like a virtual gatekeeper that decides what shows up on your feed and in what sequence.

For the insiders, Meta — Facebook's parent company — reveals that the algorithm focuses on three main elements: who posted it, what type of content it is, and how much interaction it's getting.

How facebook timeline work



Before you start eating a fancy meal, you snap a photo of it and upload it to Facebook. Your whereabouts are never, ever a mystery to your friends, thanks to Facebook's Check In button. You carefully organize your Facebook photo albums so memories are easy to find. In short, your life is an open (Face)book. But

recently, everything changed -- you probably even posted about it. Facebook rolled out their new Timeline layout for users' personal pages.

When using your Facebook account, there are two basic options for what you're looking at: Either your personal page, or your news feed. Your personal page, which used to focus on your statuses, actions and pictures, once worked a bit like a blog: The most recent events were positioned at the top of the page, and older posts came after. It was static, and didn't change -- unlike the News Feed you probably see when you first log in, which is a dynamic, changing collection of clips from your friends' walls.

Customizing your timeline and privacy setting



Timeline makes it easy to hide or delete specific posts and pictures from the timeline: Simply clicking on the item in question, even on a phone or tablet, brings up a menu for these options. But for those superusers and early adopters with long histories of Facebook use, doing this on a post-by-post basis can be prohibitively time-consuming.

If you're in doubt about exactly what personal or private information might be exposed, it's even more important to explore your account's privacy settings and understand the options. Facebook has always provided these options, and over time those privacy controls have only grown more sophisticated -- but many users have never bothered to learn the basics.

By sifting your connections, friends, family and business associates into separate groups, for example, you can make sure that closer acquaintances are privy to more personal or recreational posts, while a more formal profile can be seen by potential employers or casual acquaintances. You can define these settings easily on individual posts and tagged photos alike -- or change the overall settings in your account with a single click.

Likewise, you're in control of the applications that you use with Facebook, and the way they publish information. By reading the small print that pops up when you click on a third-party app, you can be sure you're not sharing anything you don't want people to know. A big part of the push toward Timeline is about integrating other apps and services -- like Spotify, Hulu or Netflix -- in order to share the music, TV and movies that you enjoy with others. If you don't necessarily want those things broadcast on your Timeline, you can simply adjust the privacy settings for the given app.

Facebook timeline fact & figures



While the company began as the pet project for a group of Harvard students, today it calls Palo Alto, Calif., home (the company also has an office in New York). Facebook has more than 350 employees, and the benefits package sounds pretty sweet. It includes:

Facebook's popularity continues to grow day by day. The company claims that it has more than 57 million active members -- users who have logged onto Facebook over the last 30 day period -- on the site. Since January 2007, the average number of new registrations per day is 250,000. Facebook says that the number of active users doubles every six months. Members from the United States account for most of Facebook's population, followed by members in Canada and the United Kingdom.

Facebook also claims to be the No. 1 image-sharing service on the Internet, drawing more traffic than the second-, third- and fourth- place sites combined. In terms of image numbers, this means that Facebook receives more than 14 million uploaded images every day. Because there's no limit on how many images a member can upload and new members arrive at Facebook every day, this number will likely continue to rise exponentially.

Academic Research :-

Data is an integral part of any research, be it academic, marketing or scientific. A Web Scraper will help you gather structured data from multiple sources in the Internet with ease.

Training and Testing Data for Machine Learning ProjeWeb Scraping helps you to gather data for testing / training your Machine Learning models. Quality of your machine learning models depends on the quality of training data used and when the data is not readily available you can employ web scraping to collect it from various websites.

WEB SCRAPING TOOLS OR TYPES AND TECHNIQUES.

Web Scraping Tools:-

The Software that is used for web scraping helps to ease the manual task that is very tedious. The software automatically extracts all the data that is required or mentioned by the user, like if a user wants to keep track of a product, he just has to enter the link. The extracted data will be provided in a tabular form. So, web scraping can automate the manual work programmatically by visiting each page and extract data from pages and parsing the HTML pages. There are many software or tools that are available in the market.

Beautiful Soup :

BeautifulSoup is a Python parsing library that extracts data from HTML and XML files. It is easy to use and can navigate through HTML and XML documents. This tool extracts data from web pages such as images, texts, links, etc.

BeautifulSoup mainly works by parsing HTML or XML files and generating a parse tree that it can traverse to locate specific elements. It also includes various functions for searching and filtering the parse tree.

Code snippet:

```

>>> from bs4 import BeautifulSoup
>>> sample = BeautifulSoup("<p>Some<b>example of<i>HTML")
>>> print(sample.prettify())
<html>
<body>
<p>
Some
<b>
example of
<i>
HTML
</i>
</b>
</p>
</body>
</html>
>>> sample.find(text="example")
'example'
>>> sample.i
<i>HTML</i>

```

Scrapy :

Scrapy is a Python-based framework aimed at extracting data from internet resources. It contains a rich set of web crawling, data extraction, and processing functionality, making it a powerful and flexible tool for web scrapers.

One of the major advantages of Scrapy is its performance. It is fast, efficient, and able to extract a large amount of data in a short amount of time. It can also format the results in several formats, including CSV, JSON, XML, and others.

Code snippet:

```

from pathlib import Path

import scrapy
class mySpider(scrapy.Spider):
name = "example"
start_urls = [
'https://example.toscrape.com/page/1/',
'https://example.toscrape.com/page/2/',
]
def parse(self, response):
page = response.url.split("/")[-2]
filename = f'example-{page}.html'
Path(filename).write_bytes(response.body)

```

Selenium :

Selenium focuses on browsers, which means it can be slower and requires a browser, unlike other web scraping tools. However, Selenium's flexibility and versatility make it an effective and powerful tool for scraping dynamic pages.

Selenium is compatible with popular programming languages like Python, Java, and C#. It can access the HTML of the web page and extract data. It also contains built-in methods for accessing specific elements from the web page using element IDs and classes.

Code snippet:

```

import pytest

from selenium import webdriver
import sys
from selenium.webdriver.chrome.options import Options
from selenium.webdriver.common.keys import Keys
from time import sleep
saf_capabilities = {
"build": "Sample Selenium Grid (Chrome)",
"name": "Sample for Selenium Grid (Chrome)",
"platform": "Windows 10",
"browserName": "Chrome",
"version": "14.8"
}

```

Octoparse :

Octoparse is a web scraping tool perfect for anyone who needs to extract data from websites but wants to

save time learning to code. With Octoparse, you can scrape data using a simple, visual point-and-click interface, which means you don't need any programming knowledge to get started. Octoparse can organize the result in various formats, such as Excel, CSV, JSON, and more. It also provides a cloud-based scraping solution that enables users to run it on their server. Octoparse has a built-in data extraction engine that can automatically identify and extract the data you need from web pages, so you don't have to waste time manually selecting data fields.

Web Scraping Techniques:-

1. DOM Parsing :

DOM parsing is a web scraping technique that involves analyzing the HTML structure of a web page to extract specific data elements like headings, paragraphs, images, links, etc.

The Document Object Model (DOM) is a tree-like structure that represents the HTML structure of a web page. Think of it as a treasure hunt for data from numerous sources.

DOM parsing requires a good understanding of HTML structure and can be done using libraries like BeautifulSoup. For example, if you're scraping an e-commerce website with multiple pages of products, you can use DOM parsing to extract data from each product page by analyzing the HTML structure.

2. Regular Expression :

Regular expressions (or regex for short) are a powerful technique used in web scraping to identify and extract specific patterns in the text of a web page. It's like having a superpower that allows you to find and extract information based on a specific set of rules.

For example, you need to extract all the phone numbers from a website. With regex, you can create a pattern that matches phone numbers in a specific format (such as `—555—5555\|`) and then use that pattern to extract all phone numbers from the web page.

Regex is also useful for extracting structured data like email addresses, URLs, and postal codes.

3. XPath :

XPath is a language that lets you navigate through the elements of an HTML document and select specific elements or attributes. You can use it with libraries like lxml or Scrapy to scrape data from websites.

So why is XPath so great? It can easily handle even the most complicated web pages. And even if the structure of a web page changes, you can still use XPath to extract the desired elements.

Techniques for Maintaining Data Quality in Web Scraping :-

Data quality is super important when it comes to web scraping, especially if you're using the data for important business decisions or analyses.

Some useful techniques for maintaining data quality in web scraping :-

1. Choose your sources wisely: Before you start scraping, ensure you're pulling data from reputable sources. If you're scraping from a site known for inaccurate or unreliable data, you're likely to end up with inaccurate or unreliable data yourself.
2. Check for duplicates: One common issue with web scraping is that you can end up with duplicates of the same data. To avoid this, check for copies before you analyze or use the data.
3. Use regular expressions: Regular expressions are a powerful data-cleaning tool that can help you quickly identify and fix any issues with your scraped data. They can also help you extract specific information from your scraped data.
4. Handle missing values: It's common to encounter missing values when scraping data from the web. Make sure to handle these missing values appropriately by filling them in with an appropriate value or removing the incomplete data altogether.
5. Clean and standardize your data: One of the biggest challenges with web scraping is that the data you pull can often be messy and inconsistent. To combat this, cleaning and standardizing your data before analyzing it is important. This might involve removing special characters, converting data types, or reformatting text.

APPLICATIONS.

Every emerging paradigm gains its value with an increase in its applications. Without the help of web

crawling, one would never have Google providing them with search results in an increasingly efficient manner. Google crawls around 25 billion or more web pages every day to provide you with search results. Web-crawlers arrange and sort the page result as well as assess the quality of content extracted and play many other functionalities to carry out the indexing as a result. Hence, web crawlers play a vital in generating accurate results. Therefore, web scraping is integral to the functioning of search engines.

PRICE MONITOR :

In this period of e-commerce, cost plays a fundamental purpose. One needs to keep a record of the competitor's pricing maneuverings. However, manually tracking the prices is not a viable alternative where prices face a lot of ups and downs now and then. Here web scraping shows its effect. It automates the manner of deriving the estimates as well as updates you all about the new pricing approaches placed by your opponents. One has to bring changes to day to day trade with scraped product data and, unfortunately, increase your company's competitive environment. Scaling from automatic pricing solutions to profitable investment insights, this data moves mountains. Hence, web scraping helps in smart Investment Decision Making.

MARKET RESEARCH :

Market research is critical; therefore, it requires the most accurate data for a better decision-making process. One needs High quality, and profoundly insightful web scraped data fulfilling the requirements of market analysis as well as business intelligence worldwide. Hence web scraping is a better choice for Market Trend Analysis, Market Pricing, Optimizing Point of Entry, Research & Development, Competitor Monitoring, etc.

SENTIMENT ANALYSIS:

This is one of the popular applications of web-scraping data from many social media panels along with remark sectors. Nowadays, a computer can state with excellent efficiency, whether the photograph that is posted, is a pen or a pencil. Now the level is raised to that level that even for an Election, a computer would tell with fair accuracy, the name of the winning candidate, by analyzing their tweets where it does not even have to be a direct name of the candidate itself. Here Sentiment Recognition Algorithms sense hints and detect patterns that also go beyond your tweet itself. It can conclude by using your location of the phone. This is one branch of ML that would be declared useless, and every research would discontinue if not for web-scraping. Those times are gone when tweets used to be grouped, and one would apply logistic regression based on the smileys detected in it, or the hashtags following the data statements. Now, it could even sense the variation between a passive and an active voice and make opinions about your personality through your activities on Facebook, Instagram, Twitter, etc. and this all made successful by web scraping.

CONCLUSION.

In today's era, one can find the emergence of a new paradigm in every couple of years, so is the emergence of web scraping. This paradigm has its roots in the requirement of analysis of structured as well as unstructured data. There are various aspects related to web scraping. Some of them have been discussed in this paper. Initially we have discussed various applications of web scraping. This paper is majorly focused on tools of web scraping. The availability of these tools has made helped a lot of entrepreneurs to expand their business. As manual data extraction can be tedious tools offer a variety of services that help the user to meet his/her needs. The tools discussed above have some of their pros and cons which help us choose a better fit for the work to be done. Later we hope to expand our knowledge on these tools and come up with a prototype.

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