

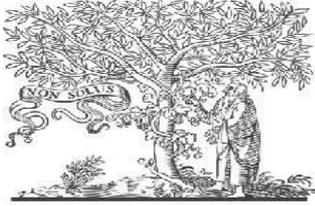


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## TRACKING REPORT ON WEB APPLICATION USING AI

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### ABSTRACT

Web tracking appears to be pervasive in online commerce, which increases users' privacy concerns. This essay provides a summary of the most recent advancements in online tracking research, revealing the techniques and importance of this field of study and lays the groundwork for further work. This study specifically addresses the following. Which research methodologies are used? What results have been achieved so far? What may be the future focus of research? A methodical review of the literature is done in support of these objectives using a recognised methodological approach. Regarding the applicable research approaches and the facets of online monitoring that they focus, the discovered publications are examined

**Keywords:** Artificial Intelligence, Spoken Language Understanding Algorithm(SLU) Visual studio.

### 1. Introduction

Programmatic advertising automates the acquisition of digital inventory, often through realtime auctioning and bidding, in contrast to digital advertising, where advertisers and publishers sign private arrangements (Stange & Funk, 2015). A growing number of marketers and advertisers are drawn to programmatic advertising (O'Connell, 2014) because it enables them to contact their target consumers in the "correct" environment and, as a result, provide greater returns on their brand campaigns (Fernandez-Tapia, 2016). The surfing habits of online users are regarded as a valuable source for creating their detailed profiles (Mitchell, 2012; Falahrastegar et al., 2016), since it is very relevant to enhancing the aforementioned commercial operations (Roesner et al., 2012).

In light of this, real-time tracking of online users across numerous websites is becoming more common (Gomer et al.

2013, Falahrastegar et al. 2014), but probably at varying levels of intensity (Ermakova et al. 2017, and even via emails) (Fabian et al., 2015; Bender et al., 2016). Web monitoring has therefore become commonplace across the Web (Roesner et al., 2012), across websites, and even between devices (Brookman et al., 2017), driven by a range of enabling approaches (Besson et al., 2014; Sanchez-Rola et al., 2016). Web tracking may be used for customization, advanced web site analytics, social network integration (Mayer & Mitchell, 2012; Roesner et al., 2012), and website development in addition to targeted advertising (Sanchez-Rola et al., 2016; Parra-Arnau, 2017). (Fourie & Bothma, 2007).

The web tracking practises also imply higher privacy losses for online users, especially mature, wealthy, and educated people who make up the most preferred target group for web tracking (Peacock, 2015), as well as risks like price

discrimination, governmental surveillance, and identity theft (Bujlow et al., 2015, 2017). Given their social habits on Twitter and Flickr, Narayanan & Shmatikov (2009) were able to accurately identify almost one third of people. Despite the fact that web tracking is common in both the business and research worlds (Libert, 2015; Hamed et al., 2013; Acar et al., 2014; Han et al., 2012; Roesner et al., 2012; Schelter & Kunegis, 2016a, 2016b; Englehardt & Narayanan, 2016; Gomer et al., 2013), earlier works on the subject have mainly focused on

This study, which serves as a literature review on the status of research on online tracking, attempts to highlight the significance and research methodologies in this area and lays the groundwork for future studies (Baker, 2000). Focus is put mostly on the following research questions: (1) What techniques are used? (2) What outcomes have been obtained thus far?(3) What may be future research topics?

## **2. Method**

We use Herz et al. (2010)'s five-step methodology for this literature review, which calls for the defining of the review's scope, subject conceptualization, literature search, analysis and synthesis, and research plan.

### **2.1. Definition of the review scope**

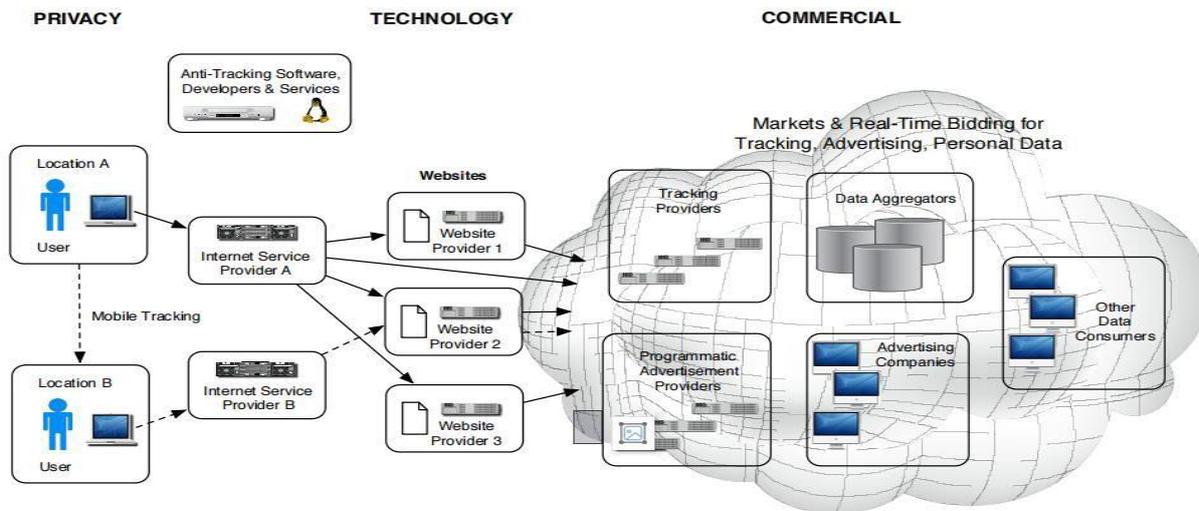
For the defining of the review scope, we follow von Brocke et al. (2009)'s advice

and use Cooper's (1988) taxonomy. In particular, we focus on research outcomes, methodologies, and applications with the goal of exposing key concerns and integrating discoveries. We structure the review using a combination of conceptual and methodological frameworks, rely on a representative source sample as the foundation for our work, and provide the findings in an objective manner to the general public and academic community.

Before the advent of Web 2.0, web tracking was regarded as a component of study on information seeking, according to the history of the subject (Taylor & Pentina, 2017). It dates back to the middle of the 1960s and was about transactionlog analysis (Fourie & Bothma, 2007). Web tracking was highlighted in the literature review by Jansen & Pooch (2001) as a way to measure how databases, CD-ROM applications, and library catalogues are used.

Around the year 2006, this notion of online tracking shifted (Fourie & Bothma, 2007). Since then (Besson et al., 2014; Sanchez-Rola et al., 2016), it has been used to refer to a

collection of methods enabling websites to create user profiles. Today, web tracking is also known as a common Internet technology that gathers user data for online advertising, user authentication, content customisation, and sophisticated analytics.



**Figure 1: Overview and conceptualization of Web Tracking**

## 2.2. Conceptualization of the topic

The study area is conceived to indicate what is known about the issue after the review scope has been established (Torraco, 2005). For this, we rely on a loosely compiled set of introductory materials amassed through earlier work or suggested by literature databases like ResearchGate based on prior study interests. Contrarily, the primary literature evaluation focuses on formal, documented search techniques for verification and repeatability. Developing websites, integrating social networks, and doing website analytics (Sanchez-Rola et al., 2016; Roesner et al., 2012; Fourie; Mayer & Mitchell, 2012-2007; Bothma). Web tracking enables these objectives. websites that are either first- or third-party to be monitored browsing habits of users, including browsing configured and historical (Sanchez-Rola et al., 2016). A broad summary and idea of in monitoring on the web, including the key stakeholders, which is seen in Figure 1.

A person visits websites through an Internet Service from a local device Provider (ISP). Either internally developed

or offered by outside companies that offer tracking services for several websites (Pugliese, 2015), allowing for cross-site tracking and data aggregation of user browsing patterns and interests. Cross-device tracking (Brookman et al., 2017) and mobile tracking can be used whenever the user changes devices or goes to a new location. Targeted advertising typically uses tracking data (Roesner et al., 2012). Due to this, there are now untapped markets for programmatic advertising, including real-time bidding for open spots on websites that users are seen. The collection of tracking and browsing data will help to improve the data profiles on individual web users for large-scale data aggregators and other data consumers. The protection of personal privacy is severely hampered as a result. The goal of anti-tracking software and services is to lessen the privacy exposure to monitoring infrastructure and methods.

The technology, privacy, and commerce are the three key facets of online tracking study that we have identified. Additionally, we look into the

research approaches that are used in this area.

### 2.3. Literature survey

Google Scholar, EBSCOhost, IEEE Xplore, ScienceDirect, AIS Electronic Library (AISEL), Springer, and ACM Digital Library were among the databases chosen for the selection of literature. In the title and keywords areas, they were

consulted with the exception of Google Scholar and SpringerLink, which do not allow keyword searches. When using the search terms "web tracking," "web security," "web privacy," "third party monitoring," and "online advertising," Table 1 displays the number of results obtained without filtering constraints

	Google Scholar	EBS CO host	Springer	ACM	Science Direct	AISEL	IEEE Xpl.
Web tracking	1540000	10	128535	67326	123409	5238	2492
Web security	1710000	25	119553	80481	67899	7417	12778
Web privacy	2200000	5	44484	72155	23813	3948	2968
Third-party tracking	442000	1	82171	27325	61233	2298	155
Online Advertising	1450000	427	38153	23518	56480	3798	800
Relevant by title	132	14	62	100	44	2	91
Relevant by keyword	-	2	-	159	22	1	15
Relevant by abstract	58	4	9	74	9	0	27
Total	45	1	7	23	6	0	4

**Table 1. Literature by database**

The papers were also examined for duplication (see "Total") and relevance based on their abstracts (see "Relevant by abstracts"). 58 of the 86 articles that made up the sample could not be retrieved or were deemed unsuitable after careful review and were thus excluded. Only three new papers were discovered as a consequence of backward and forward searches (Webster & Watson, 2002; Herz

et al., 2010; von Brocke et al., 2009). Finally, we collected 31 pertinent publications in total for thorough study.

### 2.4. Literature analysis and synthesis

A study carried out by author an exhaustive literature survey on related topic suggest that earlier tracking was performed manually. These things were done in an old school way you can say more likely in a notebook or copybook

these things were written as per the willingness of a person in simple words you can call it as “The quite manually stuff”. Then after that they have calculate the entire expenditure at the end of the month or week and a report is generated against the expenditure in comparison to the previous month or information related to that. So, they face a certain problem that time:

- Reports in not up to the mark
- A single mistake in a manual calculation and actually cost you much
- Its time consuming boring and most of the time insufficient
- Going through all the data back then rewriting them off actually makes way fussier
- It can be easily stolen or loss as well your information is not safe there.

A study carried out by author as there are many similar apps available today, to add some innovative components to make our application unique, easy to use and coherent. Apart from adding unique features like view analytics and expense history in the application, we also added features like multiple user accounts. We have an idea of making use of application for the purpose of survey in the field of expenses of user. This idea serves as a main objective of research project. The research also includes view the reports at the form of chart.

Based on research from author, MINT is aware of users’ daily expense and if they have a future goal of buying something, user can reduce your current spending according to it. Most importantly, it keeps a track on users’ credit bills, home bills and savings. This

budgeting software also will notify users whenever user is due to pay a bill or payment. This will lower the chance for users to forget to make payment. Despite having some great advantages, MINT also comes with a plenty of drawbacks such as there no guarantee of the security in this online software. The chances of getting their account hacked is worrisome as this software stores users’ financial account. The rivalry from other potential software also becomes one of the big factors. Website has too many ads while browsing through finances.

A study carried out by author for SLU, shallow parsing corresponds to the first step of understanding and aims at extracting sequence of semantic units called concepts. There are two basic problems in SLU, the semantic unit learning and the concept segmentation. In this paper we address the second problem. The concept segmentation is a sequence labelling task with words (or word lattices) as input and concept as output labels. Several methods have been applied for sequence labelling from generative to discriminative. Use a finite state semantic tagger to get a flat-concept representation of the semantic. Extend the flat-concept model with the Hidden Vector State (HVS) model

### **3. PROPOSED SYSTEM**

Because Revenue Tracker will be a web application, it may be accessed whenever it is needed. This application will have a two-tier architecture: the database layer will house all of the user data and financial data, and we used Google Firebase to provide that data in real time to the user. The user interface, which also helps the

application user engage with the system and save information in the database, will come in second. A.I.-based voice commands in the proposed system accept user input, automatically determine a revenue or expense based on a category, and then provide real-time reports of incomes and expenses in the form of charts.

System analysis is the procedure for acquiring and analysing data, diagnosing the issue, and using the data to suggest system improvements. The majority of the activities that jointly make up computer system engineering fall under the category of analysis. With a modest bit of top-level analysis and design, requirements collecting at the system level is covered by system engineering and analysis. The first technical phase in the software engineering process is requirements analysis. The process of obtaining requirements has been accelerated and is now particularly software-focused. The analyst must be aware of the software's information domain as well as its necessary behaviour, performance, and interface. System and software requirements are outlined in writing and delivered to the customer.

system analysis consists of three points

- The system's surveying and planning.
- An examination and analysis of the current system.
- The specifications for a new or upgraded system's needs and priorities. which is often compared to logical design.

### **3.1. DATA COLLECTION**

The end users' customers, who will utilise the package, serve as the main source of information for the planned system's

development. They provide information directly to the application's developers. Before creating the suggested one, a thorough analysis of the current system is conducted through the use of questionnaires or interviews. Before developing the system, various inputs, processes, and outputs are well studied.

### **3.2. SOFTWARE DEVELOPMENT LIFE CYCLE**

Different software development techniques have been identified and developed; these approaches are often known as "software development process models" and are utilised or employed during the development process of software. Each process model adheres to a certain life cycle in order to guarantee the success of the "Software Development Life Cycle" process of software development. It outlines what the new system must include. As shown in figure 5.1.1, it then develops the programme by going through the steps of analysis, planning, design, development, testing, and deployment. By foreseeing expensive errors like forgetting to get input from the client or end-user, SLDC can reduce the need for further effort and posthoc corrections. It's crucial to understand that the testing stage is given a lot of attention. You must guarantee code quality at every cycle since the SDLC is a recurring approach. Many businesses prefer to put little effort into testing, despite the fact that doing so might save them a lot of time, money, and rework. Be wise and create the proper kinds of exams.

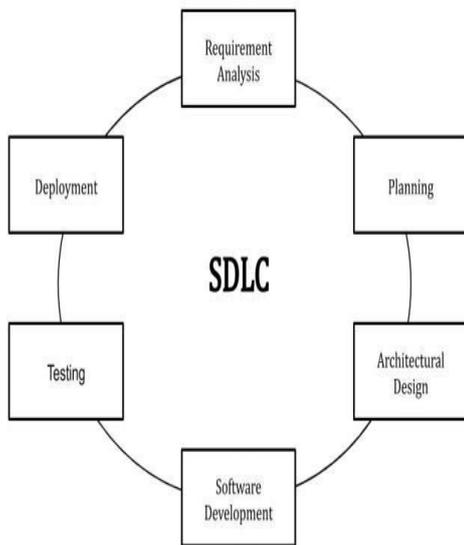


Figure-2: SDLC life cycle

### 3.2.1. REQUIREMENT ANALYSIS:

In this stage, business needs are gathered. The project managers and stake holders are primarily focused on this phase. To ascertain the needs, meetings are undertaken with management, stakeholders, and users. Who will make use of the system? How will they employ the apparatus? What information has to be added to the system? What information should the system output? These are general inquiries that are addressed throughout the phase of requirement collecting. As a result, a beautiful long list of functionalities is produced, outlining what the system should be able to do, what business logic should be used to process data, what data will be saved and utilised by the system, and how the user interface should function. The system as a whole is the end product.

### 3.2.2. PLANNING:

At this point, planning is also done for the needs for quality assurance and for the identification of project-related hazards. A meeting is scheduled with the client by the

business analyst and project manager to obtain all the necessary information, such as what the customer wants to construct, who will be the end user, and what the product's goal is. A fundamental knowledge or understanding of the product is crucial before constructing it.

### 3.2.3. DESIGN:

The outcomes of the requirements phase are used to create the software system design. This is the period in which the architect is in control and where their attention is focused. Here, the specifics of the system's operation are provided. The deliverables of a design phase include architecture, which includes hardware and software, communication, and software design (which results in UML here).

### 3.2.4. DEVELOPMENT:

The longest stage of the software development life cycle, implementation produces code from the design phase's deliverables. Since here is where the code is created, this is the life cycle that a developer is most interested in. The steps of testing and design may overlap during the implementation stage. To really automate the generation of code utilising data obtained and created during the design process, many tools (CASE tools) are available.

### 3.2.5. TESTING:

To ensure that the product is actually addressing and addressing the needs acquired during the requirements phase, the implementation is checked during testing against the requirements. During this stage, unit tests and system/acceptance tests are conducted. System tests cover the entire system, whereas unit tests focus on a single system part.

### 3.2.6. DEPLOYMENT:

When the programme has been certified and no defects or mistakes have been reported, it is put into use. The programme may then be delivered as is or with proposed improvements in the object portion depending on the assessment. The maintenance of the programme starts once it has been deployed.

### 4. USER REQUIREMENT DOCUMENTATION

A document that outlines what the user expects the programme to be able to accomplish is called a user requirement(s) document (URD) or user requirement(s) specification (URS). When all of the necessary data has been obtained, it is documented in a URD, which serves to specify exactly what the programme must do and forms a part of the contract. Customers cannot request enhancements that are not included in the URD, and

developers cannot declare a product to be ready if it does not comply with a URD requirement. The URD may be used as a reference for scheduling tasks such as testing, cost, timelines, and milestones. Due to the URD's transparency, clients may display it to other parties to ensure that all essential

### 4.1 USECASE DIAGRAM

In the Unified Modelling Language (UML), a use case diagram is a form of behavioural diagram that is defined by and produced by a use-case study. Its objective is to offer a graphical picture of a system's functionality in terms of actors, their objectives (expressed as use cases), and any relationships among those use cases. A use case diagram's primary objective is to identify which system functions are carried out for which actor. The system's actors' roles can be illustrated

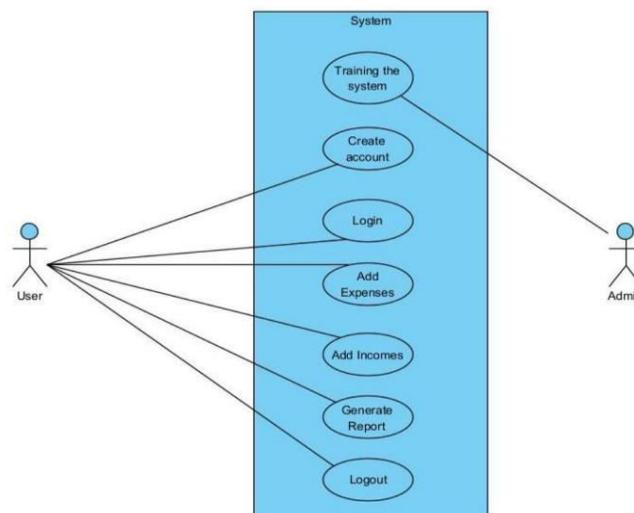


Figure-3: Use case Diagram

## 4.2 CLASS DIAGRAM

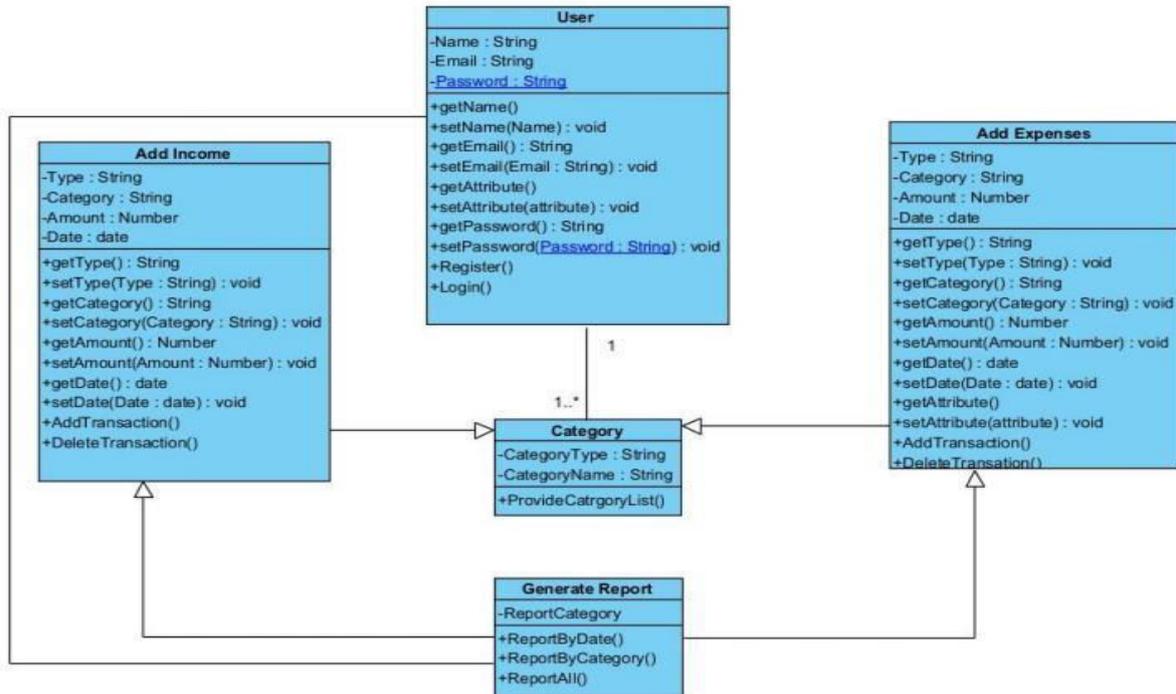


Figure-4 Class Diagram

## 4.3 SEQUENCE DIAGRAM

An interaction diagram that demonstrates how processes interact with one another and in what order is known as a sequence diagram in the Unified Modelling Language (UML). It is a Message Sequence Chart construct. Event diagrams, event situations, and timing diagrams are other names for sequence diagrams.

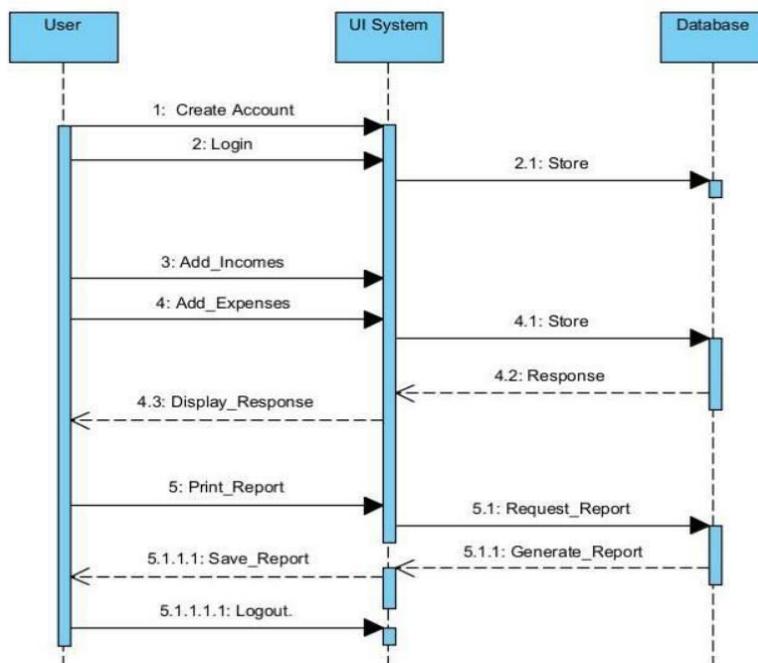


Figure-5 Sequence Diagram

## 5. DATA DICTONARY

A file or collection of files called a data dictionary houses the meta data for a database. It contains information about other database items, including ownership, connections to other objects, and other data. The data in the Firebase Realtime Database is all kept as JSON objects. The database may be compared to a JSON tree maintained on the cloud. There are no tables or records, in contrast to a SQL database. When you add data to the JSON tree, it is transformed into a node with a key in the already-existing JSON structure.

### 3.1. Research methodologies

According to the research paradigm, research approaches in the IS field may typically be divided into two categories: behavioural science and design science (Wilde & Hess, 2007). The design-science paradigm deals with creating and evaluating IT artefacts (such as models, methods, or systems) to increase their capabilities, in contrast to the behavioral-science paradigm, which aims to develop and justify theories for explaining or predicting behaviour of people or organisations (Hevner et al., 2004; Wilde & Hess, 2007).

User login page:

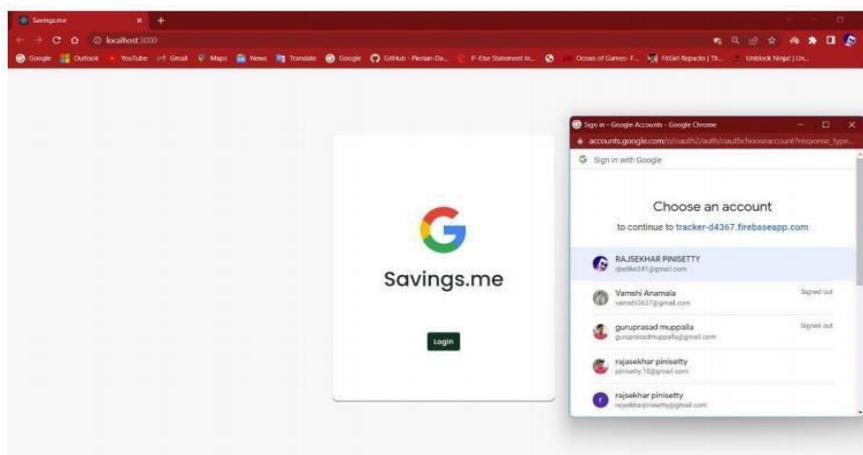


Figure 6: Login page

Home page:

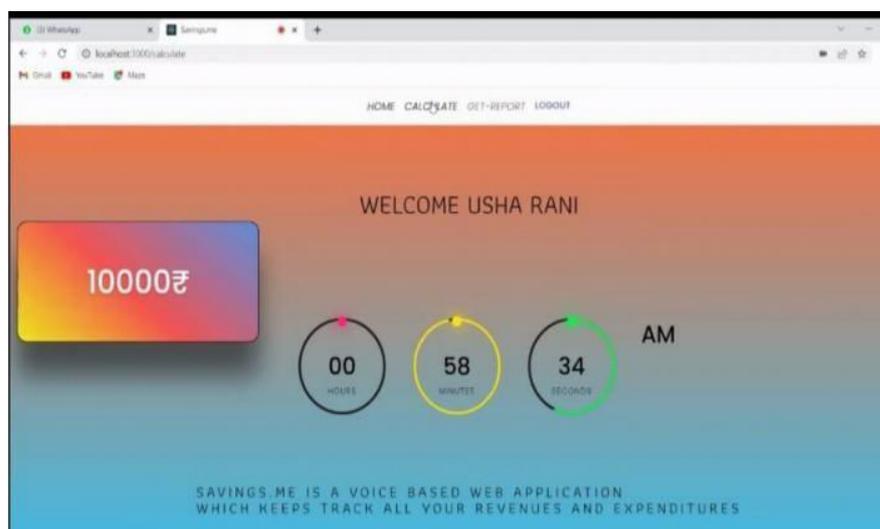


Figure 7: Home Page

## Calculate Page:

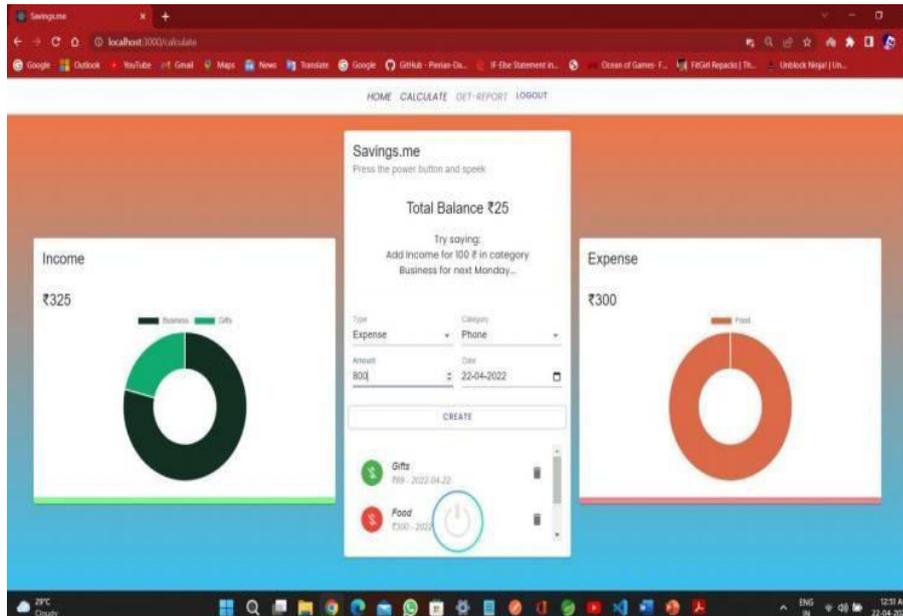


Figure 8: Calculate Page Entering Values

## Get-Report Page:

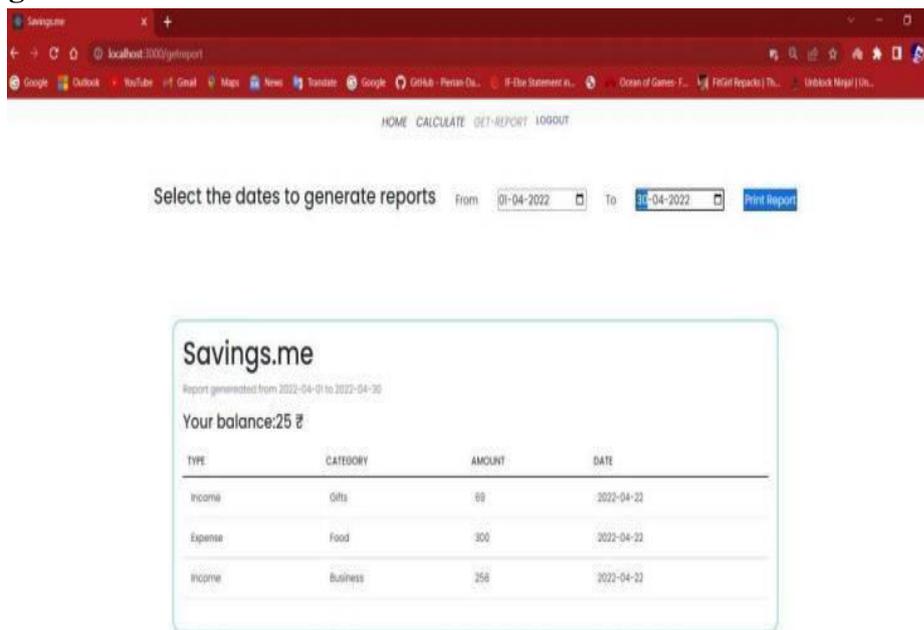


Figure 9: Get-Report Page Showing Reports Based on Dates

## 7. CONCLUSION

Tracking the daily expenses can not only help in saving money but also help in setting financial goals for the future. If we know where our money is being spent every day, it is easy to set some cutbacks

and such to help reduce expenditure. This project is developed to work more efficiently in comparison to other trackers and avoid manual calculation. It is developed to be efficient and look attractive at the same time. It provides end

users to records their income and expenses within the budget that have been planned beforehand. Furthermore, users are able to keep track on their spending so they are not wasting their money without doubt. Last but certainly not the least, they are able to access the system anytime and anywhere that is accessible.

## 7.1 FUTURE WORK

The system is well operated and function as planned, however, there are a few suggestions to make it better and even more usable in the future. Here are some enchantments for the system to work more efficient in future.

- For current report, it is only limited to a few options. Hence, maybe it will be better if the report can generate a bar graph or line graph that shows all reports together instead being separated. It would a lot easier for user to evaluate their spending too.
- It would be great if the system can perform any online payment instead of only able to generate reports and forecast budget.

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