SNS Influencer Marketing Platform for Market Advertisement of Small-Sized Business Runners

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***Abstract*—With the development of social networks, various social network marketing has been activated due to the explosive increase in digital marketing platforms using big data. Recently, influencer marketing, one of the social network marketing, has become a trend, and the demand for commissioning platforms between advertisers and influencer is increasing. This paper introduces a differentiated platform by grasping this demand. To fulfill this goal, this article proposes a web architecture, i.e., SNS Influencer Marketing Platform. The purpose of this article is to develop a platform where the client users can interact with the influencer users to promote a campaign both efficiently and flexibly. This article demonstrates the feasibility of the proposed architecture through the implementation of a cloud-based web platform and REST-API communication between the front-end and the back-end.**

***Index Terms*—SNS, influencer, marketing, platform**

I. Introduction

Reflecting the explosive growth of Social Network Service (SNS), an influencer marketing platform that links demand and supply in the advertising and public relations sectors has become a key development area. The growth of the influencer marketing platform market has achieved 74 percent growth success over the past two years, and the return on investment is 6.5 times higher than the average, which is a marketing method with strong growth potential. In addition, the customer base is more than seven times closer to influencers than famous people, which can be said to be the most effective online marketing method for creating new customers [1].

Currently, an influencer's activities such as Twitter, bloggers, and Facebook, which are traditional SNS channels, are still active, and large-scale influencers are distributed worldwide. Despite this large distribution, marketing using influencer is expected to accelerate technology development because it is not spatially limited. Nevertheless, domestic influencer marketing platforms are not being popularized much. Therefore, it is necessary to provide SNS influencer marketing platform services with various advanced digital technologies.

Because of this necessity, This paper introduces a cloud-based web architecture, which is an SNS Influencer Web Platform. The SNS Influencer Web Platform supports the interconnection between two users, i.e., influencer and client to promote a brand or advertise a business. In general, a web platform consists of a front-end and a back-end. The front-end is the user interface and the back-end is the processing of the database. This web platform is built on the cloud [2] for convenience. The proposed web architecture is a platform in which the back-end and the front-end are well-combined with the server in cloud computing. This paper describes the mutual communication process between a client user and an influencer user through the data flow between the back-end and the front-end on the server of the SNS influencer marketing platform, which is a cloud-based web platform. Through the implementation of the proposed architecture, it will be possible to promote the development of various web platforms that should be further encouraged in a modern society.

The main contributions of this paper are summarized as follows:

- **Design of commercial web platform:** We designed the framework of web platform that shows mutual communication between influencer users and client users.
- **Implementation of cloud-based web platform, i.e., SNS Influencer Marketing Platform:** We implemented SNS Influencer Marketing Platform that lets service consumers to request marketing services based on their intents. Also, the SNS Influencer Marketing Platform provides service consumers with a dynamic web service with an automated infrastructure of the front-end and back-end. This architecture can quickly provide service consumers with the appropriate data processing services through the back-end. Furthermore, users can easily access the web server through the cloud.
- **REST-API communication between front-end and back-end:** We implemented the communication method using Representational State Transfer API (REST API) [3] between the back-end nodes (i.e., database related processing) with the cloud-based server. REST API is an HTTP protocol method used to transfer data. It is a web API that responds to the requested information when a request is made to a resource stored in the server. The implementation of REST-API provides dynamic web services to consumers based on efficient data transfer.

The remainder of this paper is organized as follows. The background of components in our web platform development is given in Section II. Section III describes the overview of the proposed architecture and explains the process of data flow between the front-end and the back-end. Section IV shows the detailed organization of front-end and back-end with server interaction, and workflow of operations such as procedure of

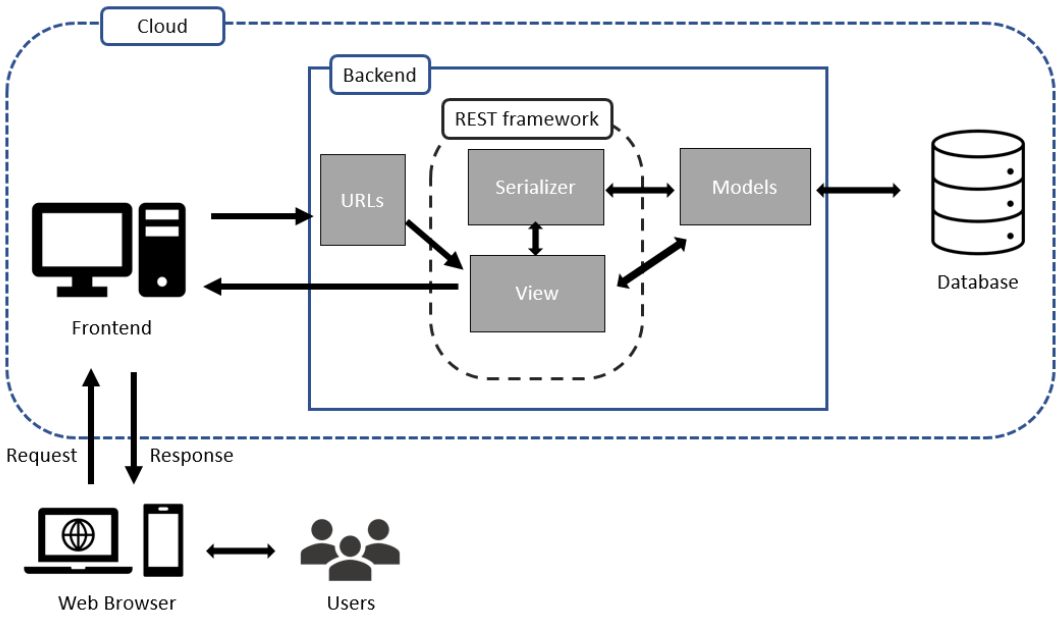

Fig. 1. Architecture of SNS Influencer Marketing Platform

campaign between a client and influencer. Section V concludes this paper along with future work.

II. Background

This section describes the components used in the SNS influencer marketing platform.

SNS (social network service) is a service that supports the creation of personal profiles and contents, the establishment of a human network through the formation of relationships with other users, and information and communication with other users through this [4].

Influencer represents a new type of independent third-party endorser who shapes audience attitudes through the use of social media (e.g., blog and tweet) with possibilities of forging alliances with promoting a brand or organization [5].

Influencer marketing platform is a strategic marketing platform that relies on companies investing in identified influencers to promote branded content for followers to drive brand awareness and purchase intentions [6].

III. Design

This section presents the goal, components, and procedure of cloud-based communication between the front-end and back-end of the proposed SNS Influencer Marketing Platform. The goal of this paper is to implement a platform where influencers and clients can interact with each other both efficiently and flexibly. To implement this platform, we divided the platform into a front-end server and a back-end server. The front-end can forwards a request from users (i.e., a client or an influencer) to the back-end, and the front-end can display the response data from the back-end to the web browsers of users. The back-end transfers the request from the front-end to the database. Then the back-end delivers the data from the database to the front-end. Through this, this design can provide users with a dynamic web service which becomes the core function of the marketing platform.

Fig 1 shows the structure of the cloud-based SNS Influencer Marketing Platform. This platform is divided into the front-end and back-end and uses REST API for communication. As shown in Fig 1, a dynamic web service can be provided to users due to separate functions of the front-end and back-end. The back-end processes data from the database and the front-end receives the necessary data from the back-end and displays it to a user through a web browser.

A. Components

In this subsection, we describe the main components of SNS Influencer Marketing Platform, which are the constituent elements of our architecture.

Users: Users in the architecture of the SNS Influencer Marketing Platform consist of client users and influencer users. The client users upload campaigns to the database in the platform. The influencer users promote campaigns uploaded to our platform.

Web Browser: A web browser shows users data written in Hypertext Markup Language (HTML) [7] from the front-end. When users access to the cloud web server, this web browser is used.

Front-end: The Front-end is a framework for display in a web browser with a user interface configured according to the user's purpose and authority. The implemented web service through the front-end allows consumers to send requests to manipulate data to the back-end with REST-API. This component provides users with a user-friendly way to query

the database without considering the underlying structure of the back-end. With this component, client users can upload advertising campaigns to the database, and influencer users can check uploaded campaigns and also apply for an advertising campaign.

Back-end: The back-end is a data processing bridge between the front-end and the database. For manipulated data transfer to the front-end, the back-end receives REST-API request from the front-end. Through the back-end, consumers can easily request their intents to the database. Through this process, the back-end delivers intents to the front-end. The component of the proposed architecture is equipped with REST-API and several components:

- **Uniform Resource Locator (URLs) [8]:** URL is a universal resource locator that routes requests to either endpoints or targets. That is, the URL forwards the request to the appropriate endpoint.
- **View [9]:** View is the middle-ware that provides a user-interacting interface, which is a component with a defined logic to process a routed request. Through the view, data is filtered or edited according to the request. The modified data is forwarded to the serializer and model(s). Lastly, when the forwarded data is replied, it is transmitted to the front-end.
- **Serializer [10]:** Serializer is a translator that translates the structure of the model and components of the view into a Python data type.
- **Models [11]:** A model defines the structure of the database.

REST-API: REST-API is a set of HTTP-based communication methods where the front-end and the back-end communicate. In other words, it plays a role of manual guide for data processing. While the front-end requests the data, the back-end can understand the detailed request through REST-API.

Cloud: Cloud is a virtual environment server that allows consumers to access the service over the Internet. In other words, through the cloud, consumers can access the SNS Fluencer Marketing platform. Our applications and databases are embedded in the cloud.

Database: The database is the data storing place in the proposed platform. That is, the database is a storage that stores consumers' data safely and provides the data when consumers needs.

B. Procedure

This subsection describes the data communication and operation procedure in the proposed architecture, i.e., SNS Influencer Marketing Platform. Data communication through a server between a client user and an influencer user via transactions is shown in Fig 2.

1) Users are divided into client users and influencer users. Client users register campaigns, and influencer users apply for the campaigns registered by clients. The data then goes through a web browser to the front-end server.
2) Campaign data received from the front-end server is transmitted to the back-end server via REST-API.

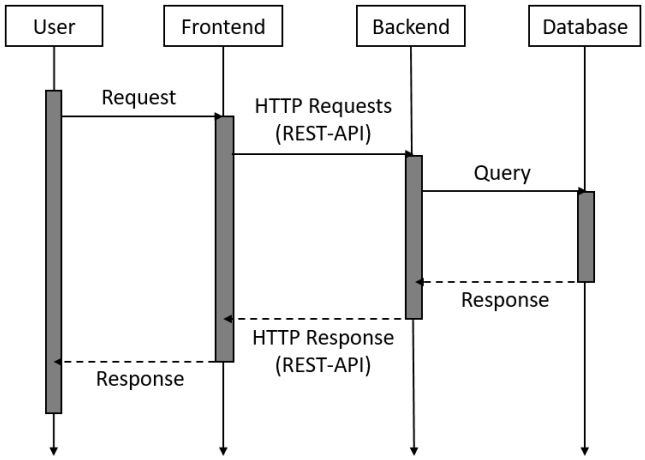

Fig. 2. Functional Diagram of SNS Influencer Marketing Platform

3) Data transmitted from the back-end is sent to the database by the query.
4) The database returns the requested data to the back-end as a response.
5) The back-end sends the received data from the database to the front-end via REST-API.
6) Finally, the front-end renders the received data to each user's web browser.

IV. Implementation

This section describes the implementation of the proposed SNS Influencer Marketing Platform in order to demonstrate the feasibility of our architecture. For the SNS Influencer Marketing Platform implementation, we used the React [12] framework for building a front-end server, the Django [13] framework for building a back-end server, and AWS [14] for building the templates in the Cloud environment. We developed the front-end server with javascript framework React.js, the back-end server with Python framework Django, and the cloud with AWS. React.js was used to provide development environment with using a script language i.e., javascript. Since most web applications are made with javascript code, it is convenient to use javascript to develop a web user interface. As a framework for javascript, React.js provides an easy library for dynamic user interface development. Django is a web application framework using Python3. This framework provides useful functions that can forward HTTP request, read or write the data to database, and dynamically create HTML pages with data loading. For this reason, we implemented a back-end server with Django that is easy to maintain and can dynamically load data with REST-API. The front-end server and the back-end server are embedded in the AWS cloud. Note that our implementation is available at https://www.samplelife.co.kr.

The Fig3 shows the implementation of SNS Influencer Marketing Platform. Client users register campaigns according to the platform's campaign application form with the cloud. Then the influencer users select and apply for the campaign

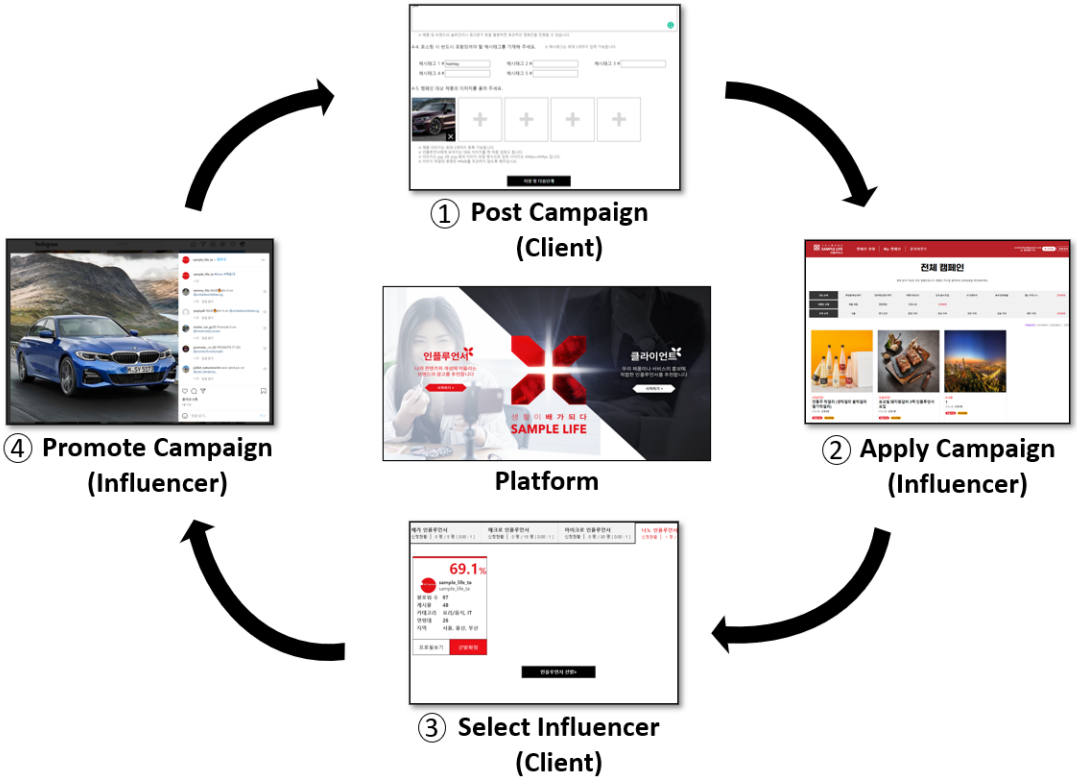

Fig. 3. Implementation of SNS Influencer Marketing Platform

they like among the campaigns registered by the client users. After that, the client users check the information of the influencers who applied for their campaign and select the desired influencer user(s). At last, the influencer users who are finally selected carry out promotions suitable for the campaign through their SNS (e.g., Instagram).

V. Conclusion

This paper provides the architecture of an SNS Influencer Marketing Platform. We demonstrated the feasibility of communication between influencer users and client users within the cloud-based SNS Influencer Marketing Platform by implementing an architecture using frameworks for a front-end and a back-end and AWS for a cloud server. For future research, an advanced marketing method will be researched. As a future goal, in order to increase commercial benefits by attracting users, we will develop efficient matching algorithms between influencer users and client users and influencer activity analysis through machine learning.

Acknowledgments

This work was supported in part by Institute for Information & Communications Technology Planning & Evaluation (IITP) grant (No. 2019-0-01343, Regional strategic industry convergence security core talent training business) and in part by Information Technology Research Center (ITRC) support program (IITP-2021-2017-0-01633). Note that Jaehoon (Paul) Jeong is the corresponding author.

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