



Faculty of Computer Science and Information Technology

AUTOMATED GMAIL EXTENSION TOOL

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(Software Engineering)

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AUTOMATED GMAIL EXTENSION TOOL

YEW LEONG KIT

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requirements for the degree of
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ABSTRACT

Email tracking is one of the essential approach to manage the respondents and increase the message deliverability rate. Managing large number of emails in a business company especially in the marketing department, huge number of manual tasks are needed. In order to make the email tracking process easier, the installation of third party software has become a common solution for most cases. However, most of the email tracking services uses the email tracking beacons for monitoring respondents' activity, which has raised the privacy and data leakage issues. A Google Add-on, namely the Campaign Monitoring Tool for Gmail is proposed to provide a more secure email response tracking environment without using the concept of email tracking beacons. The beta version of the Campaign Monitoring Tool for Gmail has been successfully published into the Google Chrome Web Store. The functionality of the Add-on has been tested and the correctness score is up to 92.22%. The efficiency of the Campaign Monitoring Tool for Gmail will be evaluated when the full version is released.

ABSTRAK

Penjejakan e-mel merupakan salah satu pendekatan yang berkesan bagi pengurusan responden dan meningkatkan kadar penghantaran mesej. Kebiasaannya, banyak tugas manual diperlukan dalam syarikat perniagaan terutamanya di sektor pemasaran bagi menguruskan sejumlah besar e-mel. Bagi memudahkan proses pengesanan e-mel, pemasangan perisian pihak ketiga telah menjadi penyelesaian yang biasa untuk kebanyakan kes. Walau bagaimanapun, kebanyakan perkhidmatan pengesanan e-mel menggunakan beacon pengesanan e-mel untuk memantau aktiviti responden yang telah meningkatkan masalah privasi dan kebocoran data. *Google Add-on*, iaitu *Campaign Monitoring Tool for Gmail* dicadangkan untuk menyediakan persekitaran penjejakan tindak balas e-mel yang lebih selamat tanpa menggunakan konsep beacon pengesanan e-mel. Versi beta *Campaign Monitoring Tool for Gmail* telah berjaya diterbitkan ke dalam Google Chrome Web Store. Fungsi Add-on telah diuji dan skor ketepatan adalah sehingga 92.22%. Kecekapan *Campaign Monitoring Tool for Gmail* akan dinilai apabila versi penuh dikeluarkan.

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Before the email was born, people were using the paper letters as the main communication tool with each other. However, the message deliverability was depending on many factors such as the weather which caused the missing or damaged letters. We were unable to know whether the message has been successfully delivered until we received a reply letter from the recipient. Moreover, the recipient's reply letter might take up to a few weeks to be arrived.

The existence of email has brought a convenient in sending mails through the internet and reduced the probability of failure while delivering the messages. Farshad Kooti and his members have reported the results from a large scale study of 16 billion of emails in their study report by more than 2 million of users in several months (Kooti, 2015). In April 2018, another study regarding the privacy risk assessment on email tracking has stated that there are 4.1 billion of email accounts and 2.5 billion of email users worldwide (Xu, 2018).

The popularity of emails has been increased over the years. The Google Gmail is one of the successive email service providers (ESP) which has about 1.5 billion of users as updated in October 2018 (Smith, 2018). However, the message deliverability is still a big concern in the era of emails. The message is only considered as successfully delivered when the recipient has responded to the email. Therefore, email deliverability tracking has become an essential approach to ensure the message has successfully delivered.

Fig. 1.1 shows the general email tracking process adapted from the privacy risk assessment research report (Xu, 2018). The embedded tracking beacon is an invisible image which will send a HTTP request for tracking purposes when the recipient opened the email.

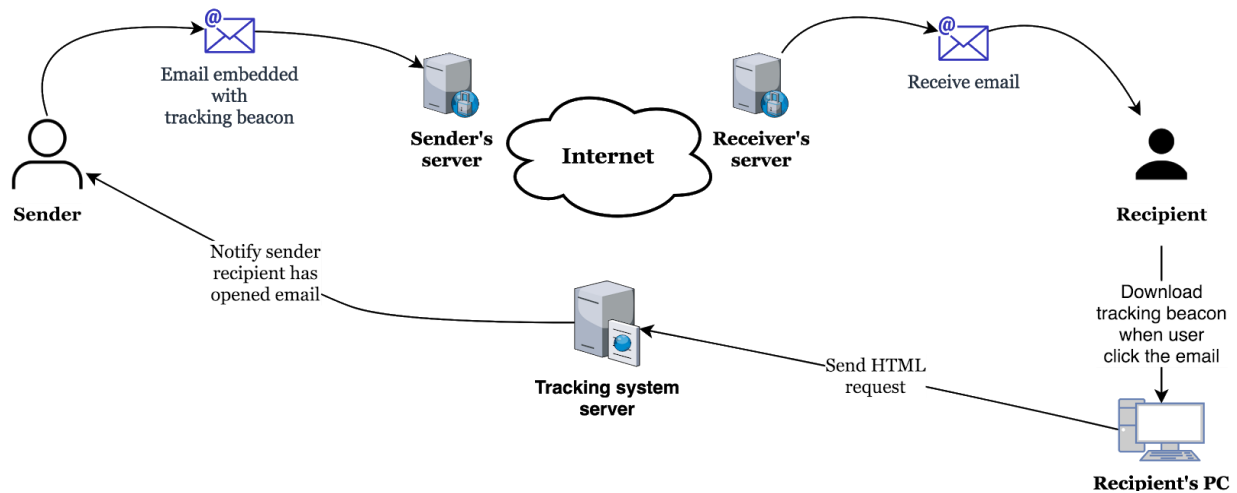


Figure 1.1: General process by email tracking services

The tracking framework shown in Fig. 1.1 has been used in most of the tracking tool such as Yet Another Mail Merge and Mail Merge for Gmail. The tracking tools are usually in the form of web applications instead of the desktop softwares.

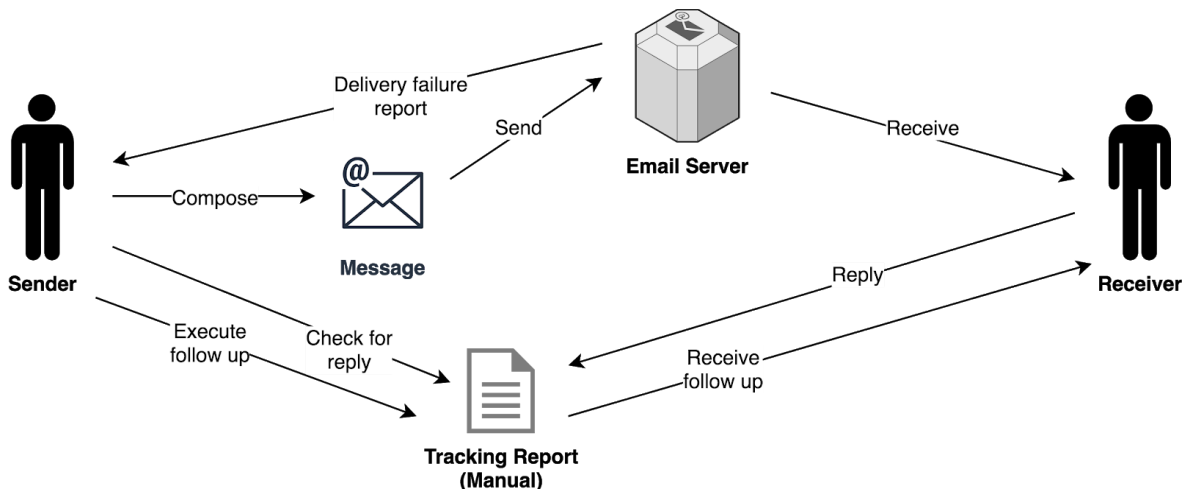


Figure 1.2: Manual tracking process in Gmail

Fig. 1.2 shows the manual email tracking process flows by using the Gmail user interface. When the sender has sent the email from the inbox, the message will be delivered to the Google's email server to validate the recipient. The message will then be delivered to the recipient after validation.

However, there are many instances of email delivery failure due to bounced email addresses or out of office notifications. Referring to Fig. 1.2, a notification email will be sent to the sender if the email has been failed to be delivered. One of probabilities of bounced emails is the recipient's email address is not registered or found in the email server database.

The sender has to check the inbox in the Gmail constantly for the email deliverability updates. Monitoring hundreds of email respondents will require a lot of time and large human efforts. Moreover, the follow up email will be sent if there is no responses from the recipient after a period of time from the email is sent. The overall monitoring process can be improved.

This project proposes a Google Add-On which named the Campaign Monitoring Tool for Gmail to manage outgoing email responses for the Gmail users. The framework of the proposed Add-On is shown in Fig. 1.3.

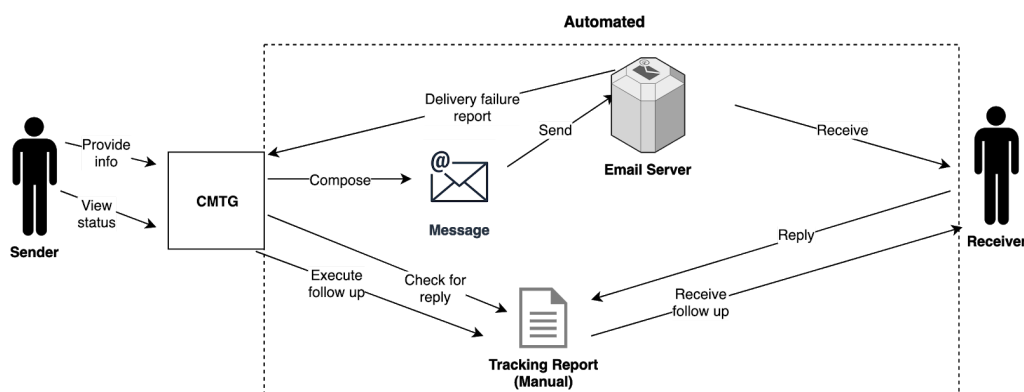


Figure 1.3: Campaign Monitoring Tool for Gmail framework

The proposed Campaign Monitoring Tool for Gmail will create the functions for sending emails, tracking responses and automating the follow up emails. The user has to provide the required information such as recipients' information, email details and the tracking due date.

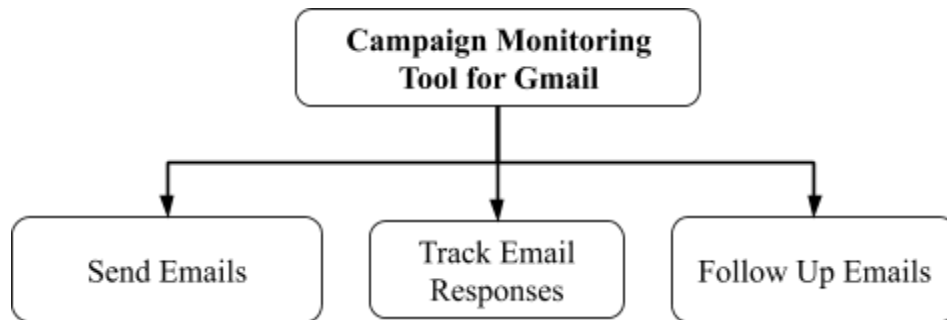


Figure 1.4: Campaign Monitoring Tool for Gmail main functions

Fig. 1.4 shows the three main automatic functions of the Campaign Monitoring Tool for Gmail which are send emails, track email responses and follow up emails. The Campaign Monitoring Tool for Gmail is created as a Google Editor Add-On for Google Sheets, which is mainly written in Google Apps Script and JavaScript. The final product will be published into the Google Chrome Web Store for all Gmail users.

Currently there are only two active Google Sheets Add-On which are the Yet Another Mail Merge (YAMM) and Mail Merge for Gmail (GMM) in the Chrome Web Store. Both Add-On are created as the Google Sheets Add-On for sending and tracking emails of Gmail. The reviews and comparisons will be further explained in the Chapter 2. This project uses the Royce Improved Waterfall Model with seven phases as the development methodology. The model and the phases will be further detailed in the Chapter 3.