

# Utilizing Pass-By Connection for Supporting On-Campus International Communication

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## 1. Introduction

In globalized community, it is important to acknowledge language to interact with people from different cultural background. As a part of language learning, oral communication plays an important role in transmitting messages through direct talk. Using language in our daily life is also important to make us fluent. However, even when someone is actually a part of an international environment, like in Ritsumeikan University, there is almost no opportunity to do some practices to advance language skills.

Using information technology can be thought as an approach to solve problems in communication. One example is from pass-by connection, which has been widely used recently. With available devices like Nintendo 3DS and smartphones, this technology can be thought as an appropriate way in connecting to the real life conversation. In this paper, a system that utilizes pass-by connection for supporting on-campus international communication is proposed. The main concept of this system is to let users set their preferred languages and interests, and the system will support them to discover people in their surroundings that match them. It is hoped that the system will trigger users to interact with people with matching language interests and to help them practice the language to boost their linguistic communication skills.

## 2. Technical Background

In implementing this system, Pass-by connection plays the most important role as a technology backbone. This technology will be actually used when users pass each other.

### 2.1 Trend of Pass-By Connection

Pass-by connection is a technology that allows devices to automatically detect each other using Bluetooth, Wi-Fi, or GPS when they pass by, and automatically exchange data (sending and receiving) between them.

Pass-by connection has been widely used recently, and some devices have applied these technologies, like Nintendo 3DS with its *street pass*, where they allow users to exchange information when they are passing-by. Another example is from *EncountMe*, an application available for iOS and Android devices that automatically exchange users profiles and notes using pass-by connection. According to their official website, their main idea is to make unexpected discoveries through encounters with new people and information [1]. Users can also check where they had actually passed each other in the map latitude. However, most of this information is not much

useful and essential to be exchanged.

### 2.2 Benefit of Using Pass-By Connection

There are 2 benefits that can be achieved when using Pass-By Connection. The first one is, users can experience a new way of encountering people, and from that, it is hoped that a trigger to start a conversation will be created. The second one is, users can feel a sense of intimacy by finding out that the person that matches their language preferences is actually around them. Unlike just browsing a person's profile on SNS to find out if they match with our language preferences, Pass-By Connection can support users by giving them a feel of closeness by acknowledging that they have passed each other. It is hoped that users can start the conversation easier when Pass-By Connection is used.

## 3. System Overview

### 3.1 Application Scenario

In this section, the application flow, starting from the first run of the application, until a real life conversation happens, is presented. When users run the application for the first time, they will be asked to login and connect the system with Twitter or Facebook account, as shown in Fig 1 (① and ②). By using this authorization system, the system will analyze users profile and language preferences and put it in their profile for current system, as shown in Fig 1 (③). From Facebook, system can take that information from the language preference that the user has set in his/her profile, and from twitter, system can use several available APIs, for example from Google, to detect the language that is used on the tweets. Another method, like natural language processing, is also considered to be used on this system [2]. User can always change or add information to the profile later after the analyzed data saved on their device. After the profile is set, users only have to let the system run on their device and they can start walking around to encounter people.

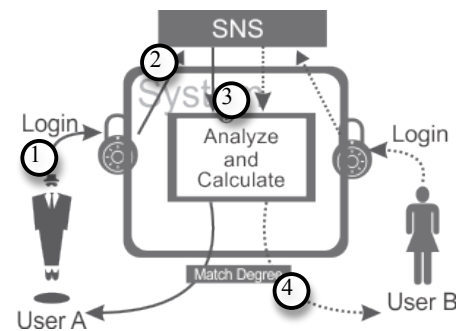


Fig.1 Application Flow

The next process is when Pass-By Connection happens. When the system detects that there is another user nearby, both of users profile that are saved on each device will be exchanged and analyzed, and by using the matching method, their match-degree will be calculated. Counterpart's profile and the matching method result will be exchanged during the pass-by connection and both users will later be able to see each other's profile and their match-degree, as shown in Fig 1 (④). Other information like similar interests, or friends in common will also be exchanged to support them to start the conversation. By being able to see this information, including counterpart's photo that has been set in the profile, it is hoped that they will get to recognize each other easier and can continue to start the real conversation.

### 3.2 Preliminary Survey

Several preliminary surveys have been conducted on this research to get to know more on the actual need and interests of users about the system [3]. Respondents are students (Japanese students and foreign students) studying at Ritsumeikan University. They were being explained about the idea of the system, and were asked about what actually makes them want to do a conversation with someone who they have not known. Most of the answers are basically similar with researcher's assumption, like sharing the same language preference, mutual friends, hobbies, or interests. The result of this survey is reflected to the matching method described below.

### 3.3 Matching Method

Matching method plays an important role on the system in calculating how appropriate is a person as a conversation partner to another person. Different weight will be assigned to several aspects like preferred language, similar interests, and mutual friends. A matching formula will be implemented to calculate based on the weight.

The main objective of the research is to support international communication, so the most important aspect that will weigh the most is the preferred language. This aspect is the most important priority that will be calculated on the matching method formula.

The next aspects that come after is mutual friend and interests. When we compare these aspects, we understand that both of them are the points when both of the users feel to share something in common. It is easier to find a topic to talk when we share the same interests. But when it comes to a trigger to start a conversation with someone we have not yet known before, mutual friend plays more important role because someone will feel safer to talk when he/she knows that the new person also knows him/her friends. Hence, the order of weight priority (from the largest) is language preference, mutual friends, and shared interests, in the default setting. Users can also change these weights based on their preference later, considering there might be some people that are interested to meet even with a complete stranger that does not have share any mutual friends.

In order to calculate the matching degree, we can compare those similar aspects into the total of all aspects

of both users. The formula is shown below.

$$m = \frac{2((l_s \times l_w) + (f_s \times f_w) + (i_s \times i_w))}{((l_1 + l_2) \times l_w) + ((f_1 + f_2) \times f_w) + ((i_1 + i_2) \times i_w)}$$

$(0 \leq m \leq 1)$

$l_s$  in the formula above is the number of similar language preference of both users.  $l_w$  is a constant of the weight of language preference.  $l_1$  and  $l_2$  is the total number of language preference of both users. The same thing applies both on  $f$  (mutual friends) and  $i$  (shared interests).

## 4. Conclusions and Future Work

### 4.1 Conclusions

This paper delivered some ideas on an international communication support system that helps people to encounter their matched counterpart based on the language interest using pass-by connection. Users will set their profile including their language preference and interests, and the system will support them to discover people in their surroundings that match them. It is hoped that the system will trigger users to interact with people with matching language interests and to help them practice the language to boost their linguistic communication skills.

### 4.2 Future Work

There are several tasks remained for this research, including system implementation and evaluation. The system will be implemented as a native iPhone application, and users will later available to download and install the system from official iOS App Store. For the evaluation part, 100 students from Ritsumeikan University (BKC Campus) are planned to be respondents for system evaluation. They will be asked to use the system for 2 weeks, first half without using matching method support and the last half they will be supported by the matching method. It is hoped that the matching method will make a better trigger for a conversation.

## Reference

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