Business Buddy: Connecting You and Your Business Partners

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***Abstract*—Keeping record of schedule and administrative information and analyzing it can be demanding in both time and mental ways. With the view to overcoming the obstacles and even provide a better service, we propose a schedule and administration management tool, called Business Buddy. With the help of voice recognition, dictation, cloud system and language analysis, the tool can keep record of the information of the business partners met in meetings. Features, technical implementation and future development are described in this positioning paper.**

***Index Terms*—time management, common core curriculum, intelligent advisory service, recognition**

I. Introduction

MOST of us, if not all of us, should have the experience of receiving piles of information in a meeting. Meeting is a common type of work for business peoples. According to an analysis of meeting conducted by N.C.Romano and J.F.Nunamaker, CEOs spend up to 70% of their working time in meetings. In a more general view, according to a survey, 7000 managers at all levels in a major high-technology company spend on average 8.4 hours per week on meetings. At the same time, a meeting involves 7 participants on average. (Romano, Nunamaker, 2001) These factors mean that executives and managers nowadays are busy meeting different peoples and getting respective information from them. Keeping record of such information and analyzing it can be demanding in both time and mental ways. Regarding this case, the secretary job is hence produced. However, many people need the service of a secretary but not all of them is capable of hiring one. In addition, the secretary cannot provide 24/7 service. With the view to overcoming the obstacles and even provide a better service, we proposed a new device called Business Buddy. With the Business Buddy, companies can greatly reduce the number of secretaries they hire to lower the cost and gain more profit. Therefore, our application will be in great need by these business peoples. Discussions of existing scheduling algorithms can be found in [1]–[5].

In this positioning paper, Sections II, III and IV describe main features, technical implementation concerns, and possible extensions, respectively. Finally, discussions of the product from the societal perspective are shown in Section V.

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II. Feature of the system

The users of the Business Buddy will get a lot of benefits from it. Fig. 1 shows the differences between the Business Buddy and human secretaries. They can keep record of the information of the business partners they met in the meeting so that next time they will be more prepared to meet the same people. Besides, with the Business Buddy, the undesired situations such as missing information and being unclear about the result of the discussion in a meeting can be avoided. It is also convenient for the users to call up the data of the former discussion on a certain issue during a meeting. And as users are set free from taking notes of the meeting, they will be more concentrated on discussion. As a result, the effectiveness of the meetings will be enhanced. In conclusion, the users of the Business Buddy can now handle the meeting in a more organized manner. Specific features are shown as follow.

A. Voice Recognition and Dictation

The Business Buddy uses an approach of voice recognition and voice typing to input data from users. This method can ensure the user-friendliness and the speed of data input at an acceptable manner. The conversation of users will be recorded and stored in a cloud system. The data stored will then be analysed and further processed by the supercomputer.

B. Cloud System

It adopts a cloud-based storage system. All the data of the system will be stored on the server. This approach can provide centralized management of the data and hence better security and organisation of the data can be achieved.

C. Language Analysis System

As the name of the Business Buddy suggests, the data stored in the cloud system will be analysed and returned to the user to provide assistance to the user. For example, some useful information can be extracted from the data (conversation content), such as the schedules or plans drew up in a meeting. Those information can then be further organized and presented to the user.

III. Technical Aspect

Basically, there are two main steps when our application works. The first step is user-recognition and account connection. Our interface should be able to recognize whom the user is having a meeting with and set up connections between them. And the next step is recording, storing and analyzing the conversations between these users. For the user-recognition and account connection step, technologies in voice recognition, facial recognition and account connection

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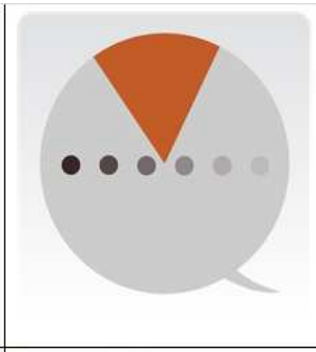

	Business Buddy	Secretary
Can provide 24/7 service?	✓	×
Can help you find business partners?	✓	×
Can help you create business chance?	✓	×
Can analyse data at high efficiency?	✓	×
Can help you obtain wanted information?	✓	✓
	(very quickly)	(not likely to be fast)
Can help you avoid missing appointments?	✓	✓
	(nearly impossible to forget things)	(sometimes he/she also forget the appointment)
Need money to hire one?	×	✓
Have a higher chance to make mistake?	×	✓

Fig. 1. Differences between the Business Buddy and human secretaries.

are involved. And for the second step, technologies in speech recognition, server, cloud database, and encryption are concerned.

A. Facial and Voice Recognition

A facial recognition is a computer application for identifying a person with a camera or a sensor. The feature on the face can be used to distinguish people, like eyebrow, pupil, nose, mouth etc. Then, an individual facial profile for each costumer can be built in the database server. It is feasible to implement this technology with the assistance of Google Glass.

Meanwhile, the identity of a user can be verified by characteristics of their voices (aka voice biometrics) in the speaker recognition process. The voice is just like a fingerprint. It can be used to distinguish people by comparing with the record. The speech style(wave form, amplitude, frequency...) of a person should be unique and non-forgettable.

There are two different functions that the speaker recognition technology needs to preform: recognizing which person is speaking and recognizing when the same speaker is speaking.

B. Account Connection

If there is already a record in the database , it may not need the facial recognition or speaker recognition. The identity recognition can also be achieved via the account connection technology in this case. Nowadays, many social applications have the same technology. The famous application, Wechat, exemplified the possibility of executing the technology. Meanwhile, Wechat also provide function to search people around you by the GPS technology.

In our design, users can select whether to show their location or not. If a user selects to show it, people who know him (already record the information in the users database) can access his information when they are near him.

C. Speech Recognition Technology

The speech recognition technology requires a microphone to translate words into a text-style file. It can also be used to execute computer commands. In other words, it can replace keyboard to perform voice input. This software can be a contributing tool in many aspects.

Complex coding algorithm are demanded by the technology owing to the fact that every user has a unique speech style with different characteristics and speech patterns. The efficiency of the recognition highly depends on factors such as regional accents, variety of dialects and lazy enunciation. These kinds of factors are really a challenge to speech recognition technology.

In order to increase the accuracy of the recognition, some speech recognition technologies involve a speaker-dependent speech recognition, which uses a “training” method. In the ”training” process, the speaker reads some certain words into the system. Then the system will analyze that specific voice clip and use it to adjust and modify the transformation, resulting in a more accurate transcription later on.

An example of speaker-dependent speech recognition:

In our design, the speaker-dependent speech recognition must be used. However, the background noise and echoes might be very loud. As a result, the word error rate of our application can be unacceptable only with the aid of present technologies.

D. Server and Clod Database

Server is needed to analyze the data inputted through speech recognition. Extracting the keywords like name, job, post would be the main function of the server in our design.

A server is a system that responds to requests across a computer network to provide, or help to provide, a network service. It is difficult to perform the process of catching the keywords from the speech in the client side device, for this task needs high level computing power to handle. Therefore,

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a set of servers with high computing power together with a fast enough bandwidth is needed. Actually this is possible with the existing 4G technologies.

Meanwhile, a database is an organized collection of data on the server side. A database system is necessary in handling this kind of large amount of data in order to increase the reliability and the speed of the process of reading and writing.

E. Encryption

Privacy will be a concern when our application has been implemented. Therefore we need to have an encryption in the data transmission process in order to protect the costumer. Encryption is a process of encoding the data in transmission so that only authorized parties can access the data. A third party cannot read it even they get the data. There are some encryption keys which specify how the message is to be encoded. And there is a secret related decryption key at the authorized side to decode the data and read it.

IV. Feature Enhancement

A. Short-term Enhancement

In short-term, Business Buddy is expected to be improved in the direction of suggesting a to-do list. The information analysed will be automatically sorted according to the users needs and generates a to-do list. The list can then help the user to finish his/her work in an efficient way.

B. Medium-term Enhancement

At the medium stage, Business Buddy can be upgraded towards a way that can also help the user in daily life but not just in work or school. Business Buddy can be used to provide useful information such as the weather, stock index

C. Long-term Enhancement

In the long run, Business Buddy is suggested to read the users mind. Reading users mind can be interpreted as learning the users thinking mode and make accurate predictions such as putting the events in different priority, in an automatically and user-expectation-meeting way. Business Buddy is then able to give more accurate and user-friendly assistance.

In addition, Business Buddy can also provide more accurate information than in the medium stage. Even some statistics can be provided if the user need them. Regarding the case of businessman, he/she may request a graph of property price in his/her region upon his/her wish and then with the aid of the returned, accurate statistics, he/she can make decision on business.

V. Social Responsibility

A. Encouraging Practice of Meetings and Collaboration

Unlike what the name Business Buddy suggests, the application is not only restricted to benefit business people but also the general public. In extension, young users such as students or interest groups can also make use the application for minutes taking and collaboration. Owing to the its minimal operations and convenient design, Business Buddy would be expected to encourage massive amount of users sharing meeting information, notes summaries and original ideas.

B. Data Privacy

Since many meetings are expected to be conducted privately, data privacy is another major concern. Business Buddy allows users to customize their privacy settings in general or for particular meetings. Monitored by our professional and sophisticated security system, users data privacy could be guaranteed safe and protected. Terms of usage are also published to tackle illegal actions involving data thefts, fake accounts, hacking and more.

VI. Conclusion

In this positing paper, we have proposed Business Buddy for keeping record of such information and analyzing it can be demanding in both time and mental ways. Features, technical implementation and future development are described in this positioning paper. In particular, we would like to propose to-do list arrangements, information aggregation and intelligent schedule arrangement as future extensions.

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