

Implementation of Natural Language Processing in Seller-bot for SMEs

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Abstract. SMEs as one of main income for Indonesia make an important part in Indonesia industry. With more than 64% contribution and bring 92% opportunity to labor, SMEs become vital in Indonesia. But in the other hand, SMEs with their limitation of resource made most of them concentrate in the production phase and give a tiny concern in marketing and sales. Bases on this issue, researcher will develop a seller-bot with natural language processing algorithm in it. It will embed in Facebook Messenger which found that seller-bot could help SMEs doing their business with automate their business especially in marketing process. In the other hand, SMEs still using eCommerce platform such as shoppee, bukalapak and other so it is more difficult to integrate that platform with seller bot in messenger. It will be easier if the customer has their own website and have full control of the application so in the process integration from the messenger to their apps, the seller-bot can break more limitation and fit with the SMEs needs.

1. Introduction

SMEs as one of main income for Indonesia make an important part in Indonesia industry. With more than 64% contribution and bring 92% opportunity to labor, SMEs become vital in Indonesia. Therefore there are 13 ministry that have concern in SMEs. But in the other hand, SMEs with their limitation of resource made most of them concentrate in the production phase and give a tiny concern in marketing and sales. Bases on this issue, researcher will develop a seller-bot with natural language processing algorithm in it and see how this seller-bot can help SMEs in marketing and sales phase for their business.

This Seller-bot will embed in Facebook Messenger since Facebook become the largest social media platform in the world and Indonesia in fourth position as Facebook users. This research will try to develop an facebook messenger app with artificial intelligent in it. It will see how automation can help SMEs in selling their product via facebook messenger.

SMEs as small enterprise always have limited resource since they focus is in production. In west java Indonesia, SMEs usually to the production first and then think how to sell it. Most of them even not know how to sell the product. The main focus is create the product but less think how to sell it. This phenoma bring us to productive and struggler SMEs. Therefore to help the SMEs, automation



technology as the concept of Industry 4.0 become relateable to fix this issue. With automation technology, especially the marketing part like in selling process can handle by a bot that integrate artificial intelligent in it.

Natural language processing (NLP) as one kind of artificial intelligent algorithm can recognize text as in conversation. With these ability, NLP can handle such conversation between customer and SMEs. Most of SMEs founder do the marketing works by answering chat form their customer. These bring so much effort in founder side since they also join in production process. Based on that issue, this research try to implement NLP algorithm to a seller bot that works in facebook messenger.

Facebook messenger choosed since facebook are the largest social media platform and almost every SMEs in west java had a facebook account to handled. Therefore this platform become the main focus to implement the NLP algorithm.

2. Study Literature

Herny Februriyanti [1] examines the use of NLP in disaster information systems. By utilizing the Google Talk server and integration with some additional hardware. This disaster notification system allows users to ask for the latest info related to the disaster that is happening. In this research, Twitter social media has been integrated with the Google Talk server in order to extract knowledge from Google Talk to answer user questions.

Soma Nugroho [3] conducted research related to NLP to identify a person's level of depression. By building chatbots that can talk to users, chatbots can find out the level of depression of the user so that further decisions can be taken. This study uses a rule-based approach so that questions from chatbots have been modeled to determine whether a person is suffering from depression or not.

Nahar Mardiyanto [2] conducted a study related to the application of NLP in headline copywriting. By combining the RTO method with writing headlines for a story, NLP will build a headline based on information received. NLP will identify the right type of words and sentence patterns according to the RTO method.

Elisabeth Nila [4] conducted research related to NLP as an information chatbot for tourist attractions in the city of Bandung. The study was conducted with the intent as a morning source of information on Bandung city visitors in asking tourist locations in the city of Bandung

3. Problem Analysis

SMEs main problem are resources. Since their capital is less than other corporates, SMEs can not hire as much staff for their business. Therefore the owner usually handle two or three business process to keep their finance health. In the other hand, this usual things make the owner so exhausted and not optimal to perform a quality works. In customer relationship process, for handle the social media, SMEs usually handled by the owner, but because the owner also monitor in production and some in distribution, user question form social media not response in quick time. This problem make the SMEs image is late and not professional.

Based on this situation, chatbot as an automatic solution considered as the best solution. With complete product knowledge, chatbot application that embed in social media will help the owner to response the customer quickly. In this research, the chatbot will embed in Facebook Messenger as Facebook is the largest social media used in Indonesia.s

3.1. Chatbot

Chatbotis one of exmample implementation of natural language programming algorithm. Chatbot give people usual experience in conversation. The artificial intelligent that embed in chatbot will give it ability to simulate conversation with human-like conersation. Therefore people will get same experience either talking to human or chatbot.

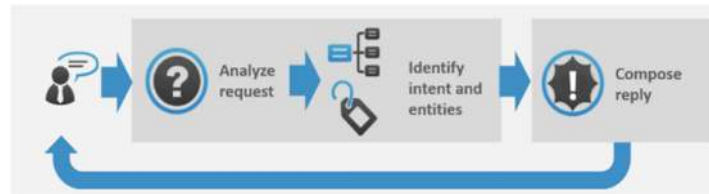


Figure 1. Chatbot workflows^[5]

There are two different task in chatbot core which are user request analysis and returning the response. In first process, chatbot first get user input in conversation and doing the analysis to define the intention of the conversation and extract relevant entities as keyword of main information of the conversation. With this process, chatbot will define the meaning of the conversation and define the best response to it.

The second process is returning the response. Once the chatbot understand the intention and extract main keywords, it will response the appropriate answer to the question. The answering itself will be set in the base knowledge of the system. So the question can do different kind but when the meaning is the same, the same answer will be perform as response.

3.2. Facebook Messenger

Since messengers have become the most heavily used mobile apps, bots have emerged as effective instruments that are changing the world of digital marketing. Messenger Marketing today is what email marketing and landing pages were a decade ago. It is fundamentally changing the way businesses interact with their prospects and customers.

Facebook messenger is one of extended application that build by facebook. As the largest social media, Facebook build this messenger apps to handle private message for their user. Today as messenger become great solution to engage with customer, Facebook Messenger also growth and target the SMEs as their market.

3.3. Chatfuel

Chatfuel is one of chatbot platform that focus in Facebook Messenger. Although Facebook Messenger is not as big as Whatsapp, Facebook Messenger has their unique market that integrate with the Facebook it self.

As platform, Chatfuel interperate the chatbot workflow and automate the system in their dashboard so the customer can focus on base knowledge of their chatbot. In chatfuel, their build the framework with two main system which are Element and Block. Elements are the most basic building component of a bot. They can contain anything from a simple text message or image, to other plugins which allow more advanced actions.

Each Element typically does one of the following: sends some content to users, asks for input or action or does some background work. Content includes Pre-Built Flow, Text, Typing, Images and other media or a gallery of items.

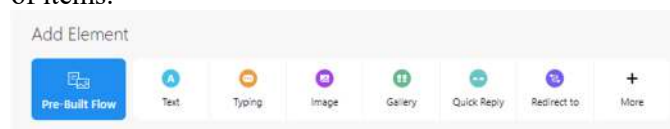


Figure 2. Add element in Chatfuel

The second part of this chatbot is block. In their respective dashboard, the block will display like pages in website of layer in mobile programming. This block is unlimited as long as the conversation make as you can imagine.

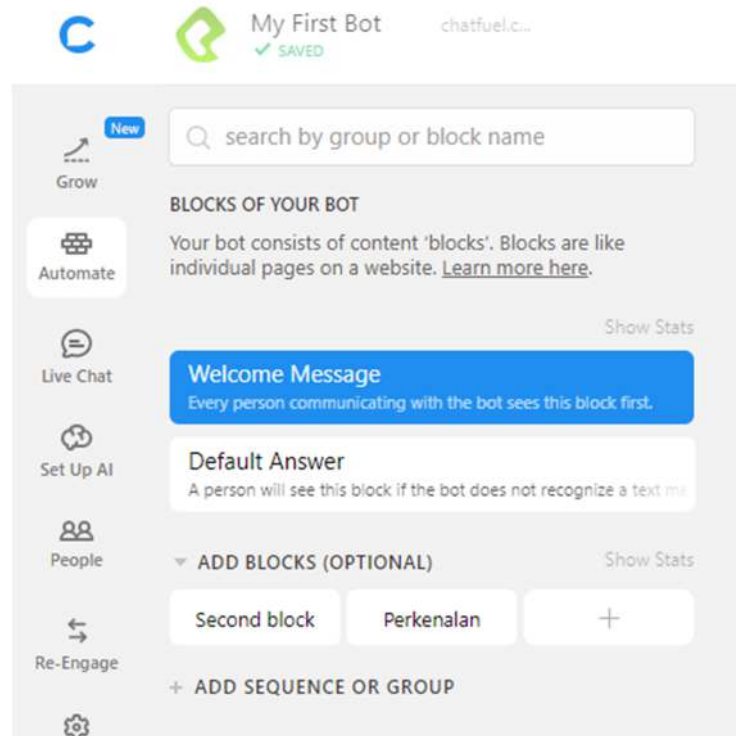


Figure 3. Block Dashboard in Chatfuel

As displayed in the dashboard, there are two block named “second block” and “perkenalan”. Chatbot content structure will build by this blocks. Blocks contain cards: text, pictures, as well as plugins for creating complex logic. Blocks are not visible to the users, but help to organize the structure of the conversation

People chatting with the bot can go from one block to another using buttons. The blocks that linked to each other will create a flow of a conversation that people can follow. This linked bloc will consist of the element so people can use the bot as customer service or even seller bot to handle the transaction.

3.4. Implementation of chatfuel

As the chatbot can used as seller bot for the SMEs. This chatbot will embed in Facebook Page. The chatbot can not embed to personal facebook account as Facebook have their regulation in Facebook for Business.

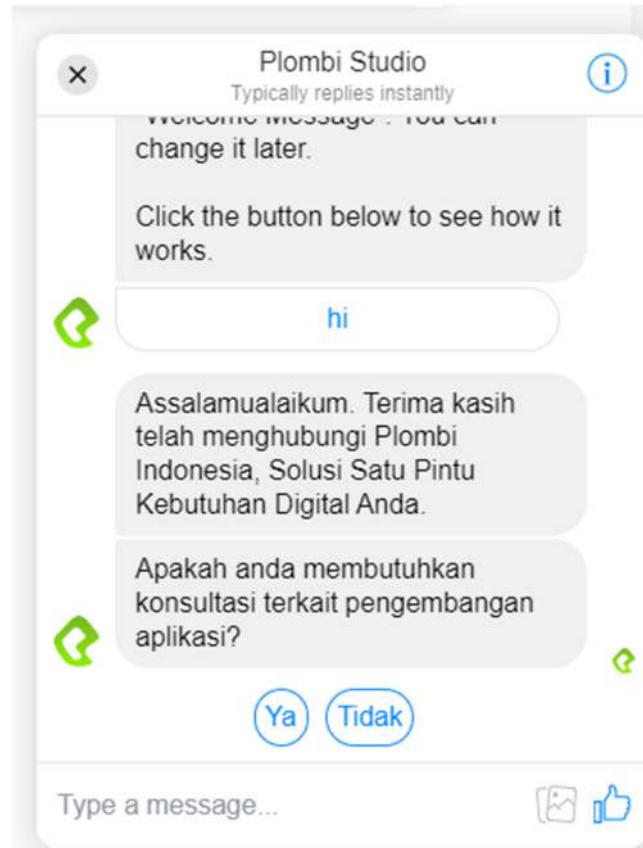


Figure 4. Chatfuel implement in PLOMBI Facebook Pages

In the Figure 4, the system first will greetings the customer with a welcome message. This block will consist of text and buttons. Button “Ya” dan “Tidak” will performs as linked agent to link this block to other block respectiove to the button people click.

This block will do as long as conversation can imagine like product knowledge or maybe to bargain the prize of the products.

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