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# Abstract

# Introduction

In this section, this essay will mention about the background and the motivation of this project. Also, introduce some primary concepts about the chatbot, natural language understanding and Rasa.

## Background

Machines can think. It is a prevalent story in a fiction movie or novel. Such as in movie Prometheus, David is an AI robot which helps main actors to analyse information, answer questions and support them during their universe adventure. It is hard to believe that would become true in part of regular life one day in the few decades. However, it seems not absurd anymore.

In recent years, artificial intelligence has explored widely. One of the major topics to be investigated in this field is the chatbot which connects with Machine Learning, Big Data and Natural Language Processing. These research let the machine can understand what does human say and respond to a proper answer to people. For example, Watson is the question-answering system posted in natural language and developed by IBM. In 2011, it defeated the human player to win the first-place prize on Jeopardy! Moreover, in 2018, google demo the Google Assistant to make an appointment in an actual phone call.

Due to those significant achievements from the chatbot, people are developing a lot of different type of application in the business market. Also, implement the chatbot on social media like Facebook, WhatsApp, Telegram, etc. to help people solve their problem. It not only reduces the personnel costs but also increases the convenient. That is why the chatbot has gotten popular.

## Motivation

## Chatbot

The chatbot is a software application designed for extended conversations and set up to mimic the human to human chat behaviour. Also, it used to conduct an online chat conversation via text instead of providing direct contact with a live human agent.

Chatbots are regularly utilized in dialogue systems for different purposes including client service, request routing, or for data collection. Some of the chatbot applications use extensive word-classification processes, Natural Language processors, and complicated AI, others scan for common keywords and generate replies using general phrases obtained from an associated library or database.

J. Daniel and J. Martin (2018) indicated that chatbot architectures could be divide into two classes. First is rule-based systems which involve the early famous ELIZA and PARRY systems. Second is rule-based systems. It analyses large datasets of human-human conversations, which can be done by using information retrieval or by using a machine translation typical example such as neural network sequence-to-sequence systems, to learn to map from a user announcement to system response.

## NLU

## Rasa

Rasa is an open-source Machine Learning framework for making chatbots. It supports not only text but also voice-based dialogue. Additionally, it can connect to messaging social media such as Facebook, Telegram, etc., and APIs. Rasa also has an external feature named Rasa X, which uses actual conversations to enhance the chatbot and building chatbot as well.

Rasa helps you create contextual assistants capable of having layered conversations with lots of backwards and forwards. For a human to have a significant exchange with a contextual assistant, the assistant needs to be capable to use context to build on something that was previously discussing.

# Literature Review

## Chatbot

## NLU

## Rasa

### Rasa Architecture

### Compare NLU framework