



## ARTIFICIAL INTELLIGENCE IMPLEMENTATION OF RESTFULL WEB SERVICE IN LANGUAGE TRANSLATION USING MOSES DECODER METHOD FOR ANDROID APPLICATIONS

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**Article history:**

Received: Feb 12, 2023

Revised: Feb 20 2023

Accepted: Feb 27, 2023

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**Keywords:**

*Artificial Intelligence,*

*Android,*

*Languages, Moses Decoder*

*Method*

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**Abstract**

Language is the ability that humans have to communicate with other humans using signs, such as words and gestures. Estimates of the number of languages in the world vary between 6,000–7,000 languages. However, precise approximations depend on an arbitrary change that may occur between languages and dialects. Natural languages are speech or sign languages, but any language can be encoded into a second medium using audio, visual, or tactile stimuli, for example, graphic writing, braille, or whistles. This is because human language is independent of modality. With so many languages, it results in a lack of understanding of other languages, for example, if we meet someone who speaks a different language from us, we don't understand what that person is reading. With this the author wants to create an Artificial Intelligence System to assist in translating each language into other languages.



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### I. INTRODUCTION

Information technology is currently developing very rapidly resulting in a culture of using gadgets in everyday life. Currently, the gadget that is often used is a smartphone. With the advancement of smartphones, there are many applications that make it easier for us in our daily lives, such as dictionary applications and so on. Language (from Sanskrit भ्रषा , bhāṣā) is the ability possessed by humans to communicate with other humans using signs, such as words and gestures. Estimates of the number of languages in the world vary between 6,000–7,000 languages. However, precise approximations depend on an arbitrary change that may occur between languages and dialects. Natural languages are speech or sign languages, but any language can be encoded into a second medium using audio, visual, or tactile stimuli, for example, graphic writing, braille, or whistles. This is because human language is independent of modality.

As a general concept, "language" can refer to the cognitive ability to be able to learn and use complex systems of communication, or to describe the set of rules that make up those systems or the set of utterances that can result from those rules. All languages rely on semiotic processes to link signs with specific meanings. Every nation has their own language, like Indonesia has Indonesian and the United States has English. We can master Indonesian easily because we live and grow up with the language that has become our culture for many years, but what happens if we are faced with English, will we have difficulty understanding the meaning and correct understanding of every

English vocabulary. From the explanation above, the author creates a system that can help translate vocabulary and long sentences into various languages, for example, English to Indonesian or Spanish to English. By utilizing Artificial Intelligence, the author creates a system that is the basis for building an android application for translating all languages, namely " *Implementation of Artificial Intelligence RESTful Web Service in Language Translation Using the Moses Decoder Method for Android Applications* ".

## II. RESEARCH METHODS

### 2.1 Data Collection

In collecting data for this research, the authors use several methods, the methods that the authors use are as follows:

1. Documentation Techniques  
The author collects some data from various dictionaries and information on the internet, the data is used as the basis of vocabulary for this translation.
2. Observation Techniques  
The author conducts various simple studies on the suitability of vocabulary in various languages to be able to provide an overview of the accuracy in translation.

### 2.2 Design Models

In this research stage using the UML Model, *Unified Modelling Language* (UML) is a language that has become the standard in the industry for visualizing, designing and documenting software systems. UML offers a standard for modelling a system. (Yuni Sugiarti, 2013).

### 2.3 Data Analysis

A system that is designed to be able to process problems requires analysis to find out the process of running the system. To find out the problems and needs in system design, it is necessary to analyze the data that has been done in the previous data collection. Some of the data needed to start making the system is as follows:

1. Vocabulary data, this data contains information on the vocabulary of various languages.
2. Group data, this data is a grouping of input into sentences.
3. Data translation, this data is the data that results from the translation of the input.

## III. RESULT

### 3.1 Design

#### a. Statistical Translation Engine Architecture

The Statistical Translation Engine Architecture utilizes Decoder algorithms that focus on translation from input to output through the Moses model, the following SMT model:

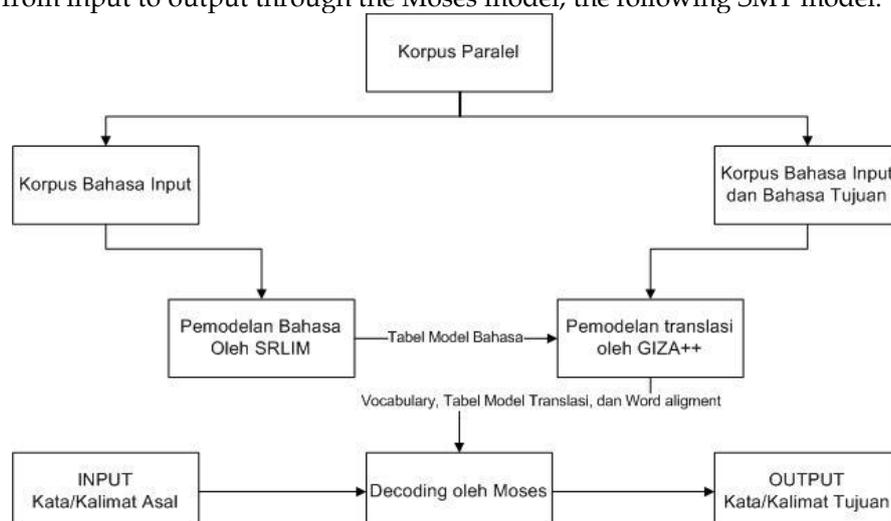


Figure 1. SMT models

#### b. Restful Web Service Architecture

This architecture is the architecture that describes how to model the *RESTful Web Services* that run to be developed on the *Client Server*.

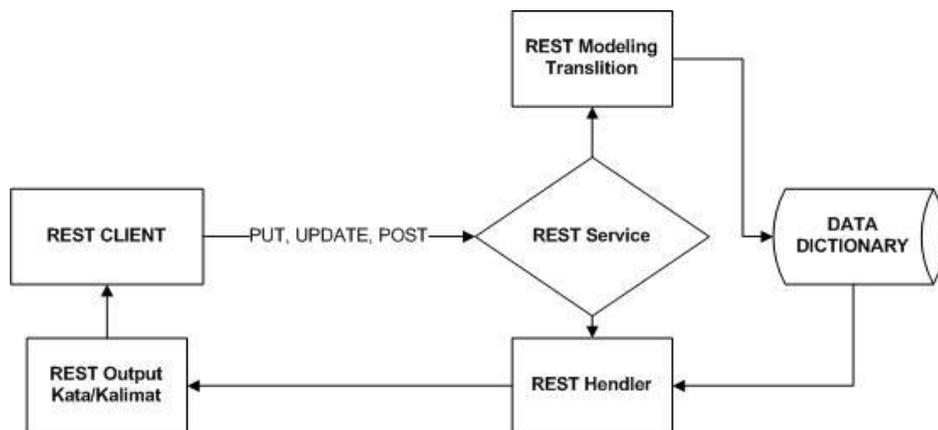


Figure 2. *RESTful Web Service Model*

c. Use Case Diagram

A functional description of a system, so that system users understand and understand the system to be built. The use case forming components are actors who can represent someone who interacts with the system.

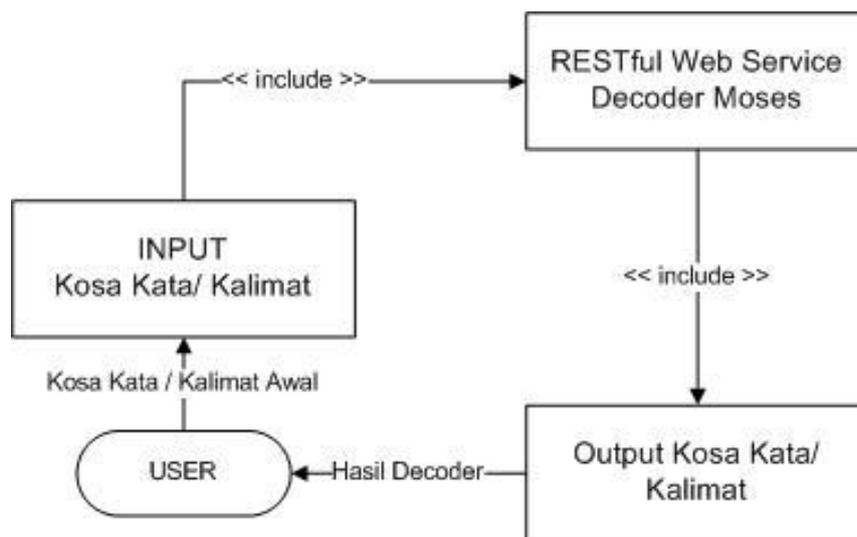


Figure 3. Use Case Diagram

d. Class Diagram

Class diagram is a diagram that describes the structure of the system in terms of defining the classes that will be made to build the system. Class has 3 main parts, namely attribute, operation, and name. the classes that exist in the structure of the system must be able to perform functions according to system requirements.

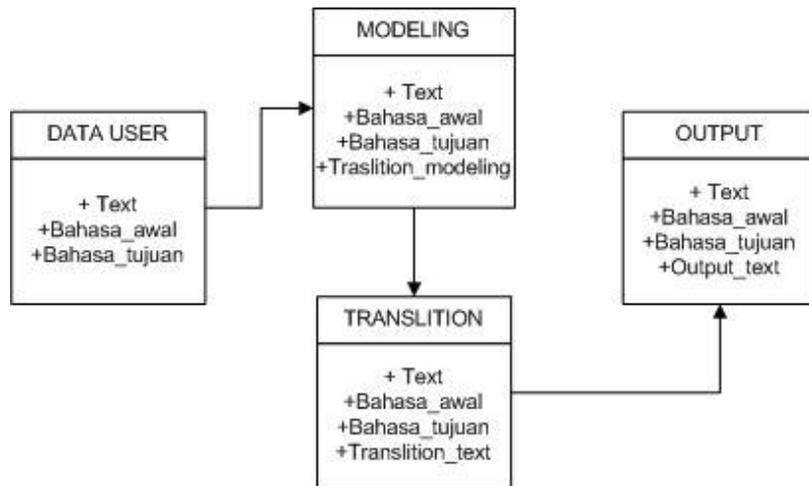


Figure 4. Class Diagrams

### 3.2 Implementation

#### a. Restful Web Service Result View

To find out the RESTful Web Service for language translation, the author uses the Postman application for testing.

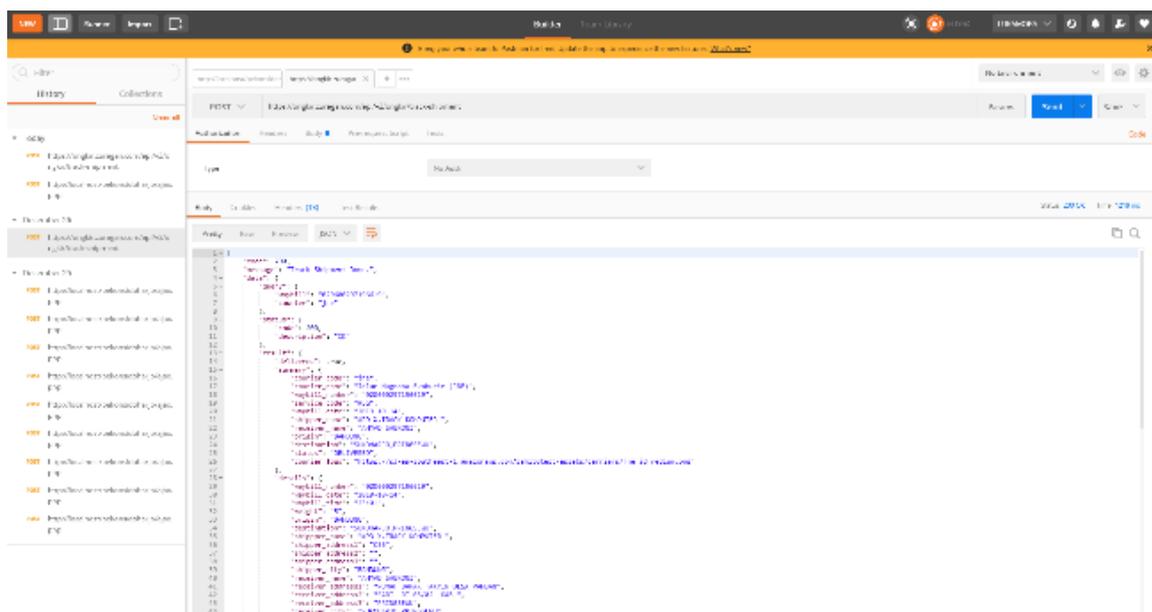


Figure 5. Display of RESTful Web Service

#### b. Android Text Input Display

Android application display for input of vocabulary or sentences to be translated into the target language.



Figure 6. Text input display

c. Display Language Selection

This page is for the choice of initial and destination languages so that translation can produce that which is in accordance with the choice of language.

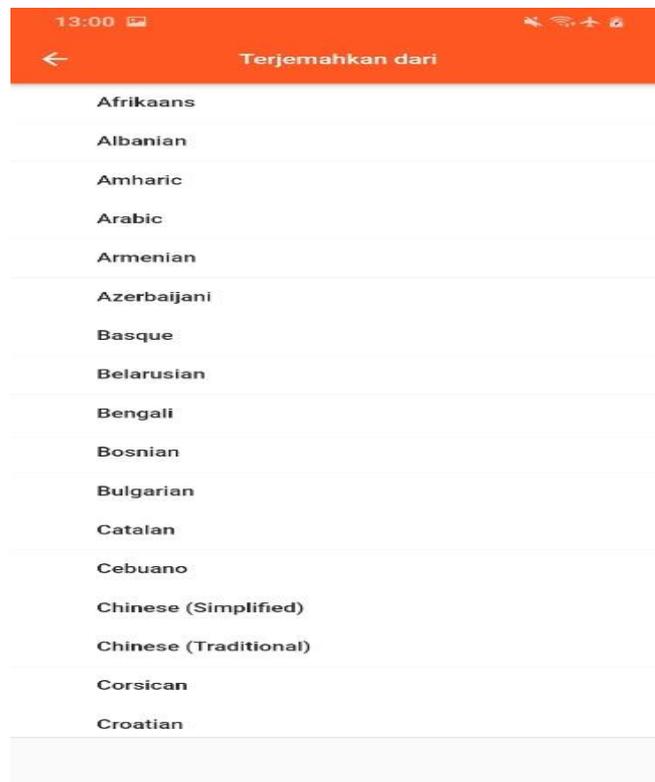


Figure 7. Language Selection Display

### 3.3 Display of Translation Results

This page will display the results of the translation from the initial language to the destination language.

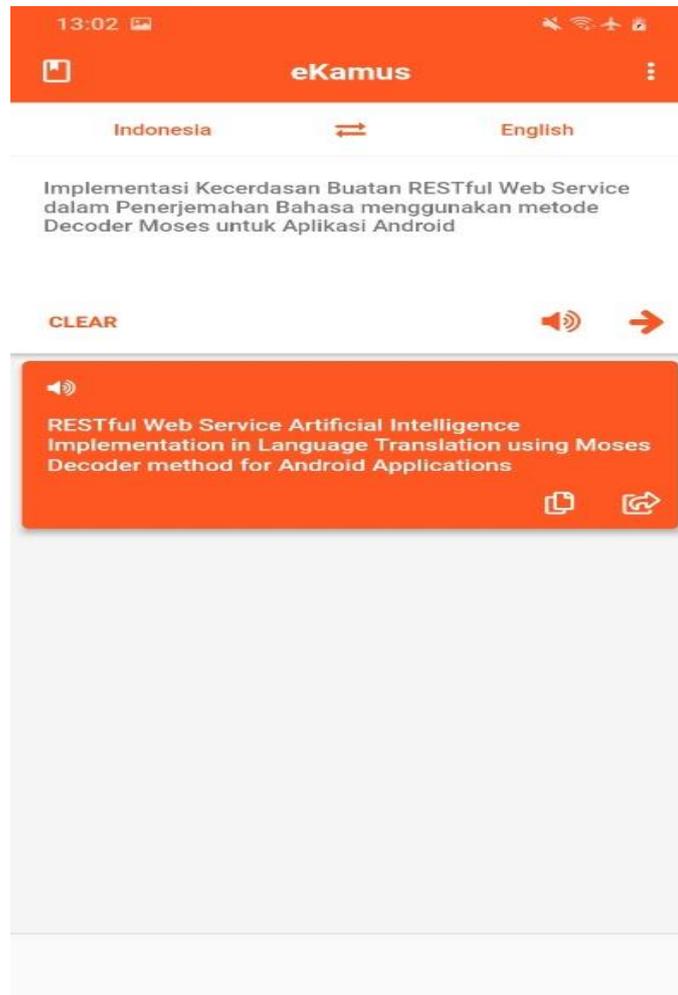


Figure 8. Display of Translation Results

With this research, the writer can see how a complex design makes a sentence so that it can be translated into another language. By utilizing the Moses Decoder method research can produce the desired translation, without the need for *manual checking*, the Moses Decoder method can correct any errors using *historical data*. And by utilizing Android as an application to implement a *RESTful Web Service*, this translator produces a technology to help translate various languages anywhere and anytime.

## IV. CONCLUSION

The following are some conclusions drawn from research on the Implementation of RESTful Web Service Artificial Intelligence in Language Translation Using the Moses Decoder Method for Android Applications, the Moses Decoder method has succeeded in producing a suitable translation. *This RESTful Web Service* can be developed so that it can run on the *Android Operating System*.

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