

**University of Technology (Yatanarpon Cyber City)
Faculty of Information and Communication Technology**

University Chatbot using Artificial Intelligence Markup Language

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Group Member

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Abstract

- ❖ Chatbots are conversational systems that can do chat interactions with human automatically.
- ❖ Most of the chatbots utilize the algorithms of artificial intelligence (AI) in order to get the required responses.
- ❖ In this project, we developed the design of a University Chatbot about university information in Myanmar Language based on Artificial Intelligence Markup Language.

Introduction

- ❖ Conversational agents become essential by interacting of machines with the desired users to provide natural language interfaces.
- ❖ The role of chatbots in the information technology and communication is widely in used.
- ❖ Many chatbots are created day by day through marketing, medical, education and banking.
- ❖ In educational system, it is essential for teaching, learning and searching the desired information for a specific area.

Artificial Intelligence Markup Language

- ❖ AIML is an XML based markup language for specifying chatbot content.
- ❖ AIML consists of data objects called AIML objects, which are made up of units called topics and categories.
- ❖ Categories are the basic units of knowledge in AIML.
- ❖ One category is a rule for matching an input and converting to an output, and consists of a pattern, which represents the user input, and a template, which responses the answer.
- ❖ The AIML pattern is simple and consists of words, spaces, and the wildcard symbols _ and *.

AIML Categories

- ❖ There are three AIML types:
 - a) atomic categories,
 - b) default categories, and
 - c) recursive categories

Atomic Category

- ❖ Atomic categories are those with patterns that do not have wildcard symbols, _ and *.

<category>

<pattern> မင်္ဂလာပါ **</pattern>**

<template> ဟုတ်ကဲ့ မင်္ဂလာပါရှင် **</template>**

</category>

Default Category

- ❖ Default categories include wildcard symbols * or _.

```
<category>  
<pattern> _ အဆောင်ပေး * </pattern>  
<template> ဟုတ်ကဲ့ အဆောင်ပေးပါတယ်။ </template>  
</category>
```


Recursive Category

- ❖ Recursive categories are the categories with templates <sr_{ai}> and <sr> tags, which represent recursive artificial intelligence and symbolic reduction.
- ❖ Recursive categories involve many applications:
 - (i) symbolic reduction
 - (ii) divide and conquer
 - (iii) synonyms resolution

Symbolic Reduction

<category>

<pattern> တီ ချယ် နှင်း အေး သန့် ကို သိ လား </pattern>

<template> သိပါတယ်။ ICT ဌာန ရဲ့ ဌာနမှူး ဖြစ်ပါတယ်။ </template>

</category>

<category>

<pattern> တီချယ်အေးဝေဦးကိုသိလား </pattern>

<template> သိပါတယ်။ CE ဌာန ရဲ့ ဌာနမှူးဖြစ် ပါတယ်။ </template>

</category>

<category>

<pattern> * ကို သိ လား </pattern>

<template> <srai><star/> ကို သိ လား </srai>

</template>

</category>

Divide and Conquer

<category>

<pattern> ကျေးဇူးပါရှင့် </pattern>

<template> ဟုတ်ကဲ့ ပြန်လည်တွေ့ဆုံဖို့မျှော်လင့်ပါတယ်။ </template>

</category>

<pattern> ကျေးဇူးပါ * </pattern>

<template><srai> ကျေးဇူးပါရှင့် </srai></template>

</category>

Synonym Resolution

<category>

<pattern> ကျောင်းလိပ်စာ သိချင်လို့ပါ </pattern>

<template>

ပြင်ဦးလွင် မန္တလေးလမ်းမကြီး၊ မိုင်တိုင် ၂၈၊ ရတနာပုံမြို့သစ် အနီး၊ ပြင်ဦးလွင်ခရိုင်၊
မန္တလေးတိုင်းဒေသကြီး ဖြစ်ပါတယ်။

</template>

</category>

<category>

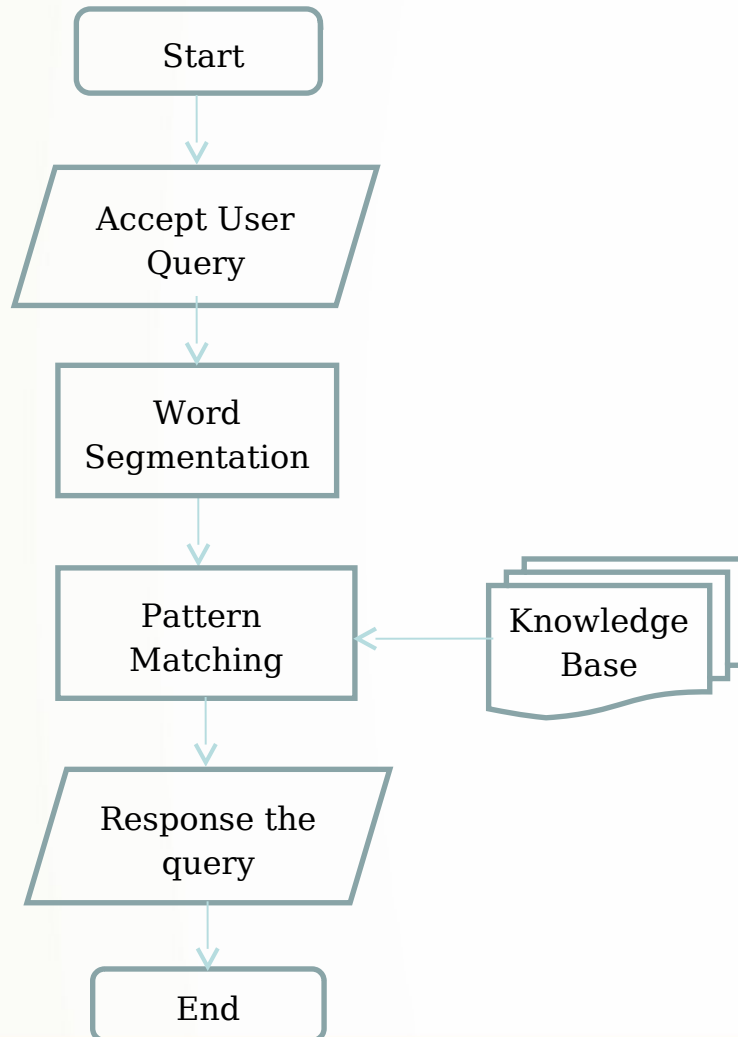
<pattern> ကျောင်းကဘယ်မှာရှိတာလဲ။ </pattern>

<template><srai> ကျောင်းလိပ်စာ သိချင်လို့ပါ

</srai></template>

</category>

Flowchart of the System



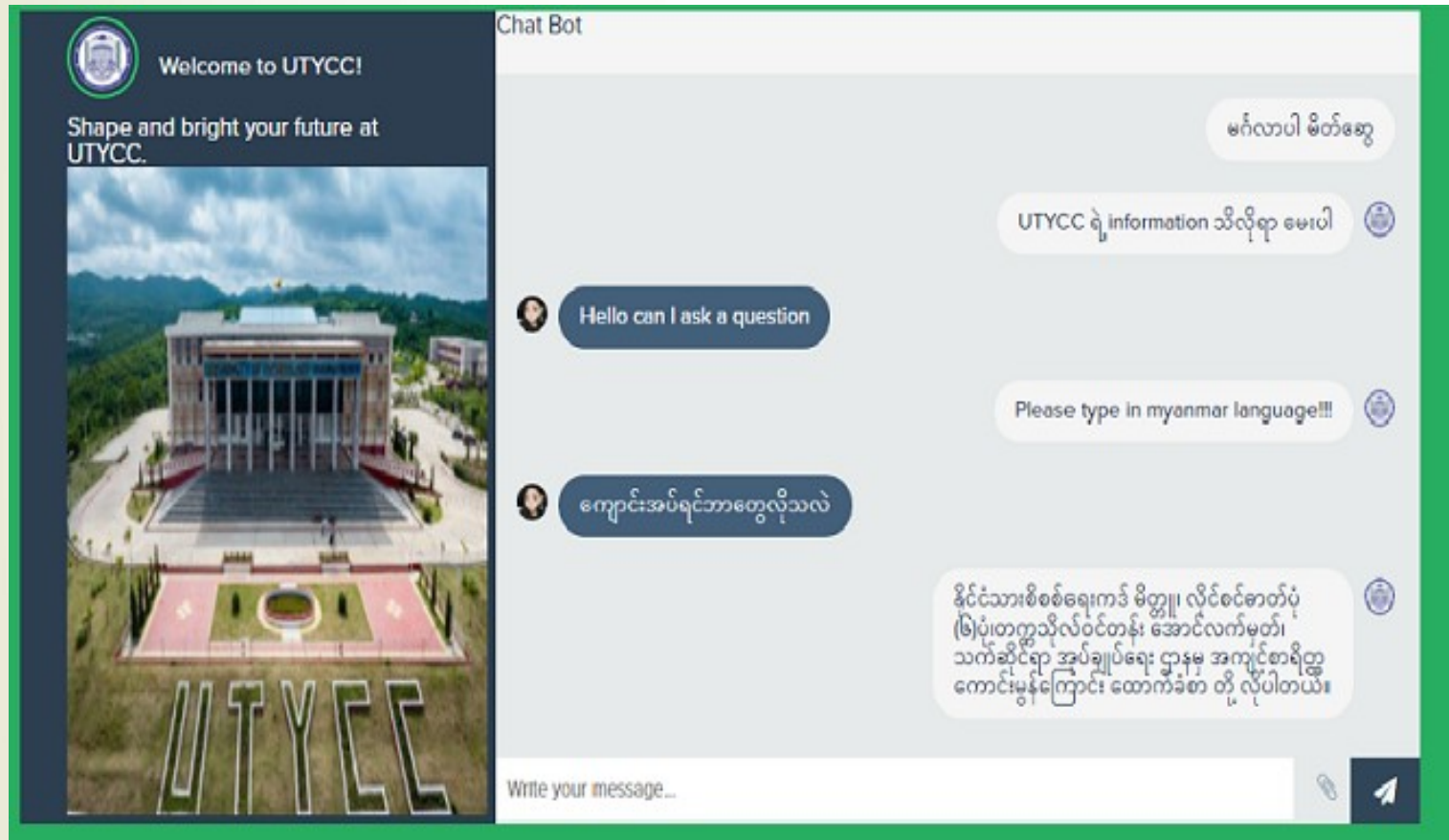
Implementing the System

- We have implemented a Myanmar interactive chatbot for university frequently asked questions.
- According to the Artificial Intelligence Markup Language, we have used different AIML tags to get the user required information from the bot.
- **Word Segmentation :**
<https://github.com/stevenay/myan-word-breaker/find/master>
- Pattern Matching : use Python File by calling AIML interpreter
- Evaluation : manual


AIML Tags Used In The System

No	Tags Used for AIML Categories
1	<category> </category>
2	<pattern> </pattern>
3	<template> </template>
4	<srai> </srai>
5	<random> </random> with
6	<set> </set>
7	<get> </get>

Sample output of the System




Mismatch Question Example



Welcome to UTYCC!

Shape and bright your future at UTYCC.



Chat Bot

မင်္ဂလာပါ မိတ်ဆွေ

UTYCC ရဲ့ information သိလိုရာ မေးပါ

ကျောင်းသားရေးရာကဏ္ဍမှာလဲ

Main Building ရဲ့ အောက်ဆုံးထပ်မှာပါ

ကျောင်းသားရေးရာကဏ္ဍမှာလဲရှင့်

ထပ်မံကြိုးစားကြည့်ပါရှင့်

Write your message...

Testing and Evaluation

- ❖ Rule-based chatbot contains a faster time-to-relevance, delivering a faster impact on user interaction.
- ❖ This chatbot is one of rule-based chatbot and developed on AIML language for the UTYCC, PyinOoLwin.
- ❖ The data include the university related questions and information that the students, teachers and parents frequently asked.
- ❖ The number of question-answer pairs in the system that are utilized for different topics and type of categories are about 350.

Result

Topics	Number of Questions	Matched Answer	No Matched Answer	No Answer
Location and Address	5	3	0	2
Academic	10	7	2	1
Brief History	7	4	2	1
Faculty and Staff	5	3	1	1
Library	5	2	3	0
Total	32	19	8	5

Workload

Cho Zin Oo

Building Database, UI, Implementation, Testing

Cho Wah

Preparing data for Faculty & staff and Academic, Report, Testing

Hnin Ei Ei Cho

Building Database, Power Point, Implementation, Testing

Phyo Haymar Wai

Building Database, UI, Implementation, Testing

May Myat Myat Khine

Preparing data for Brief History and General, Evaluation, Testing

Hay Man Htun

Preparing data for Conference and Library, Report, Testing

THANK YOU