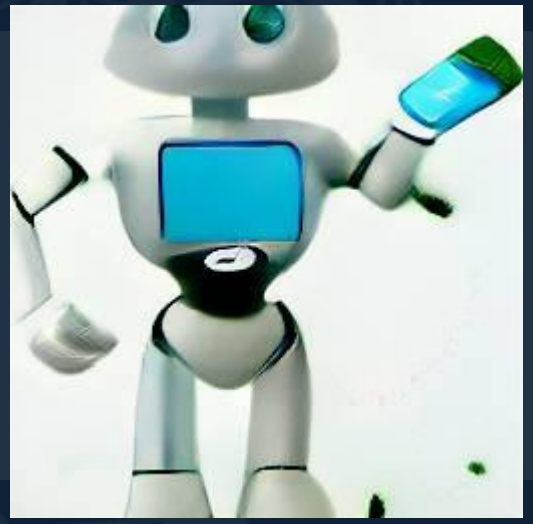
Auto-QSCID

Chatbot as a screening tool to detect and classify the risks of common DSM-5 disorders.



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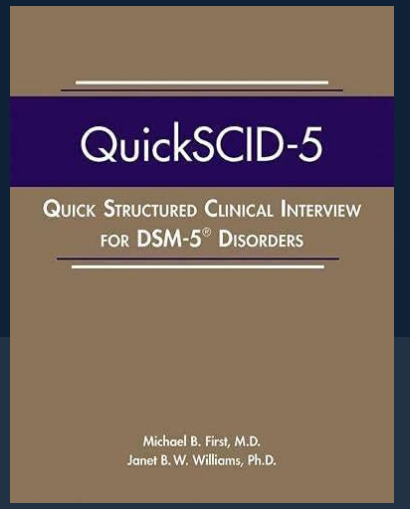
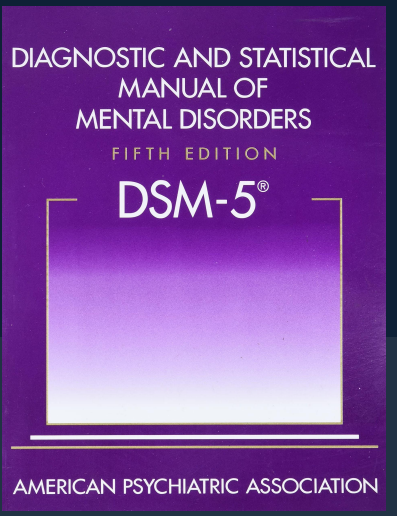
AI Builders 2022

Project Description



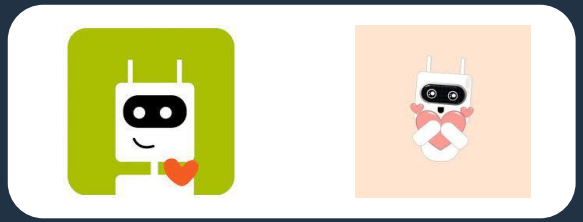


What is Auto-QSCID?

- A chatbot where users can send text messages to
- An online QuickSCID-5 questionnaire
- A classifier of common DSM-5 disorders from the text messages

Inspired by:

JUBJAI bot (depression detection chatbot)
And PSYJAI bot (stress, depression, and anxiety chatbot)

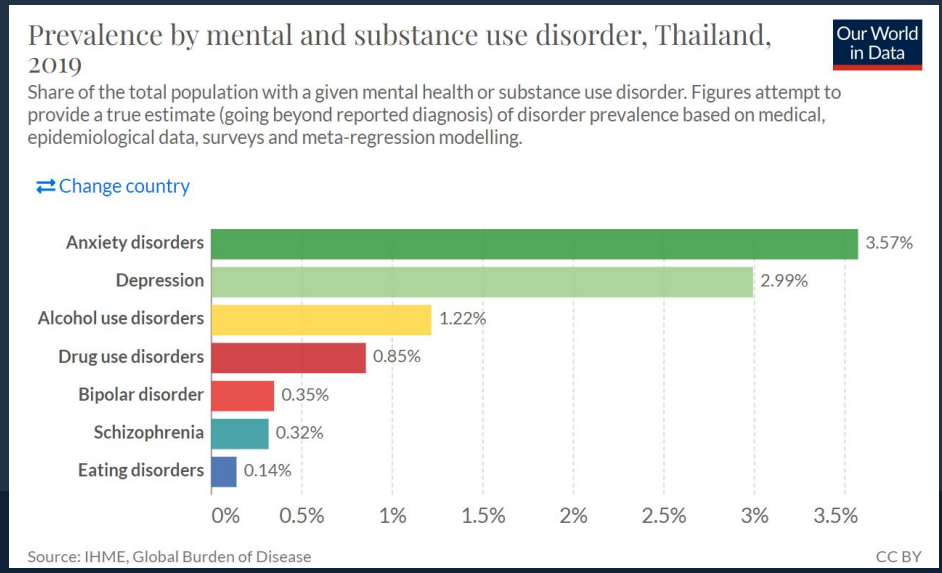


Project Description

What does Auto-QSCID help do?

Auto-QSCID receives input from messages and run them through a classifier. The classifier will be able to classify and detect the risks for the top 5 most common DSM-5 illness groups in Thailand, which includes:

- Anxiety disorders
- Depression
- Alcohol & substance use disorders
- Bipolar disorders
- Schizophrenia



Prevalence by mental and substance use disorder. Our World in Data. (n.d.). Retrieved May 10, 2022, from https://ourworldindata.org/grapher/prevalence-by-mental-and-substance-use-disorder?country=~THA

Project Expectations

What values does this project return?

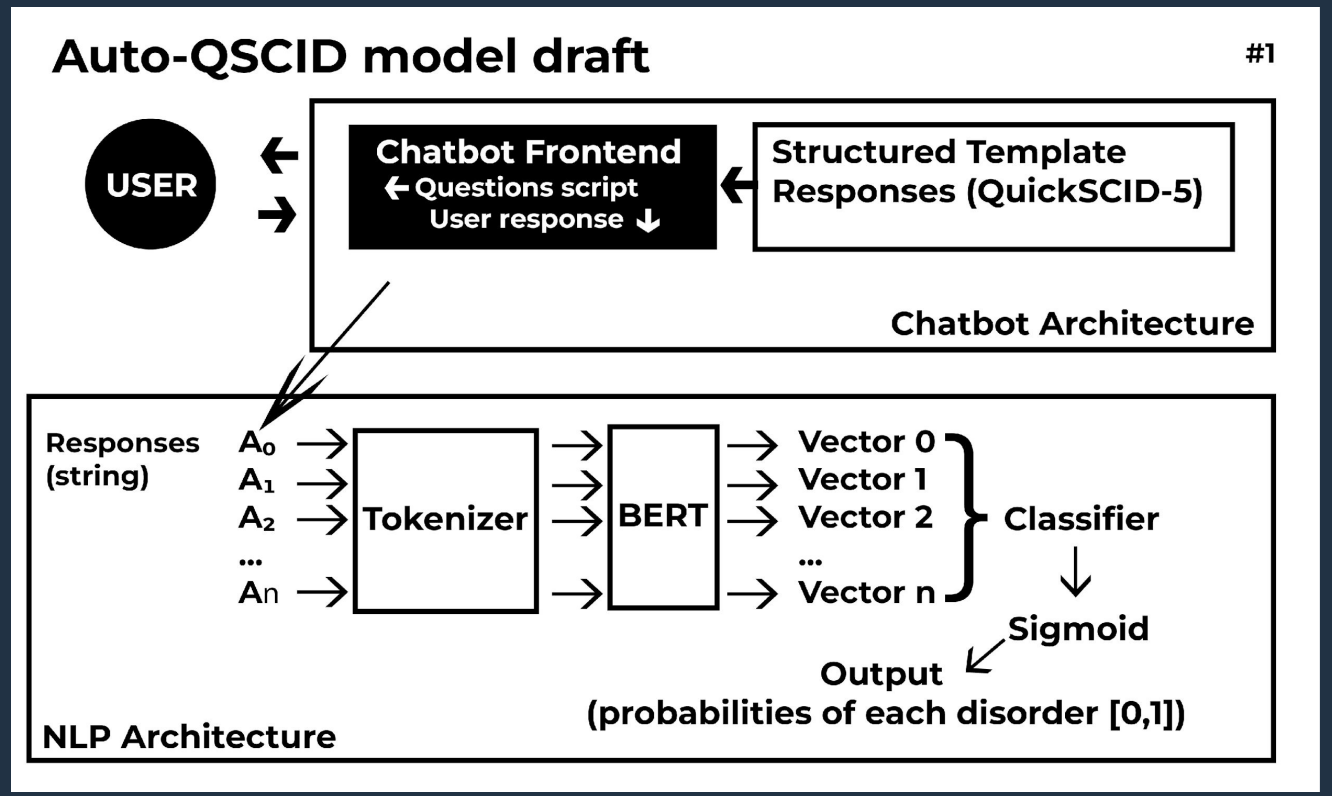
Auto-QSCID plans to give users an assessment of the risks of the disorders. Furthermore, it should provide users with details about their potential conditions.

Methodology

The model

This model contains 2 architectures. A rule-based chatbot that responds with a QuickSCID-5 script. And a NLP architecture that vectorizes the responses with a BERT, and classifying them into probabilities of different conditions.

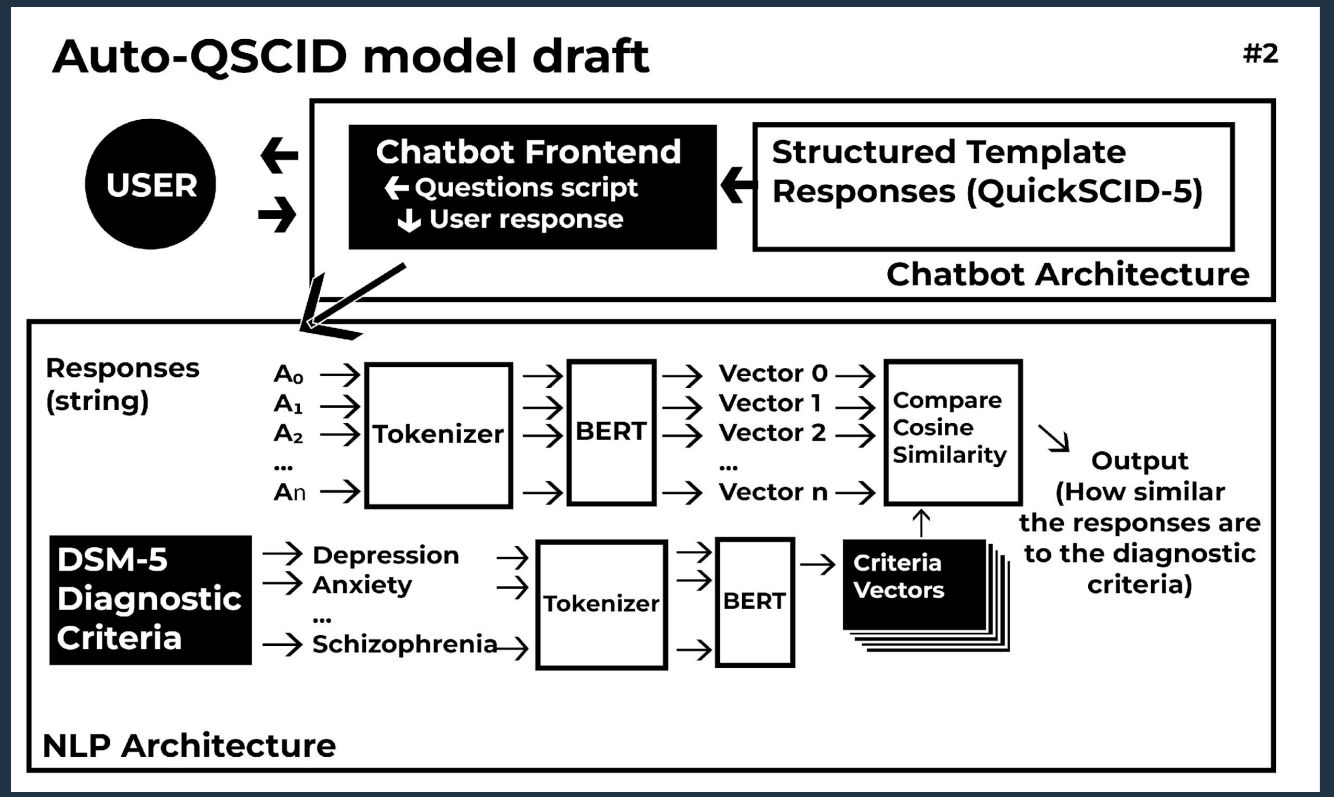
To implement this model, we will have to train only the BERT classifier.



Methodology

An alternative

This model takes and vectorizes the input like the previous one. But instead of being run through a classifier, the vectors get compared with a set of vectorized diagnostic criteria and the output is the similarity of the two vectors.
There are 2 tokenizers and BERTs in the NLP architecture, which will be identical.



Methodology

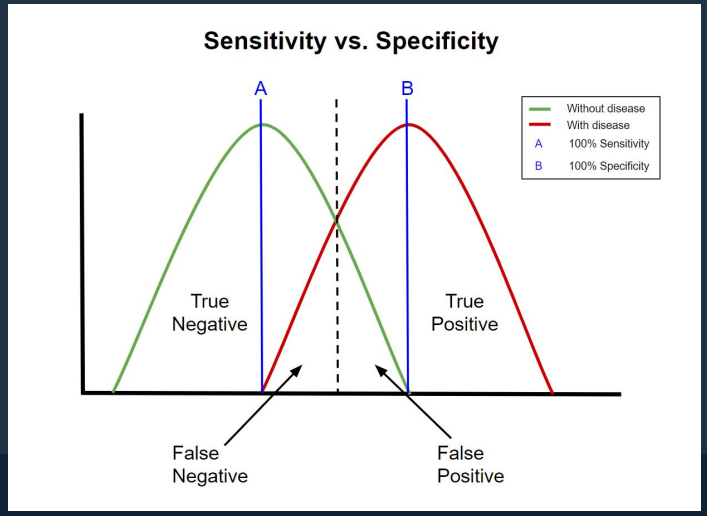
The dataset

Both models require training on the BERT, which can be based of WangchanBERTa. The data that will train the model should be messages that are related to mental disorders. Models can be adjusted depending on availability of labels.

Success Metrics

What metrics should Auto-QSCID consider?

Auto-QSCID will primarily use accuracy and f-1 score as a success metric. However, due to the clinical purpose of the chatbot, further metrics such as sensitivity and specificity.



Expected Impact

We see Auto-QSCID to be a chatbot that serves a purpose like JUBJAI and PSYJAI, but is capable of classifying broader groups of disorders.

Things We Need

So, what is still needed?

This has been a general idea around building Auto-QSCID. But many components are still needed, such as:

- A dataset that will be used to train the models
- A copy of QuickSCID-5
- A copy of DSM-5
- Advice on delivering the interview questions
- Advice on getting answers from users