

LawBot

A Community Based Chatbot to Provide Legal Assistance

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Introduction

- Today lot of people face the question of from where and whom to find the legal assistance for the different issues they face in life. To find the accurate and contemporary legal solutions, most people need to go through lot of hassles wasting lot of their time, money and effort. To overcome this issue, we have come up with '**Lawbot**', a **legal assistant chatbot** which helps people with their legal issues.
- It will be developed using Natural Language Processing (NLP) to add the human element to the chatbot.
- k-means clustering algorithm would be used to map the ambiguous words and phrases in the user's input to the pre-defined legal areas in the knowledge base.
- Lawbot will be made only for three legal areas which were finalised through results of a survey done for community. They are 'Road Accidents', 'Citizen's Registrations' and 'Employment Information'.
- Lawbot will be available all 24/7, providing legal solutions for user's question asked either as a text or voice instantly without any delay for free of charge.
- And also, Lawbot has the ability to provide directions for the legal places and get the user download any document he needs.
- Lawbot will be the first Sri-Lankan legal assistant chatbot.

Background

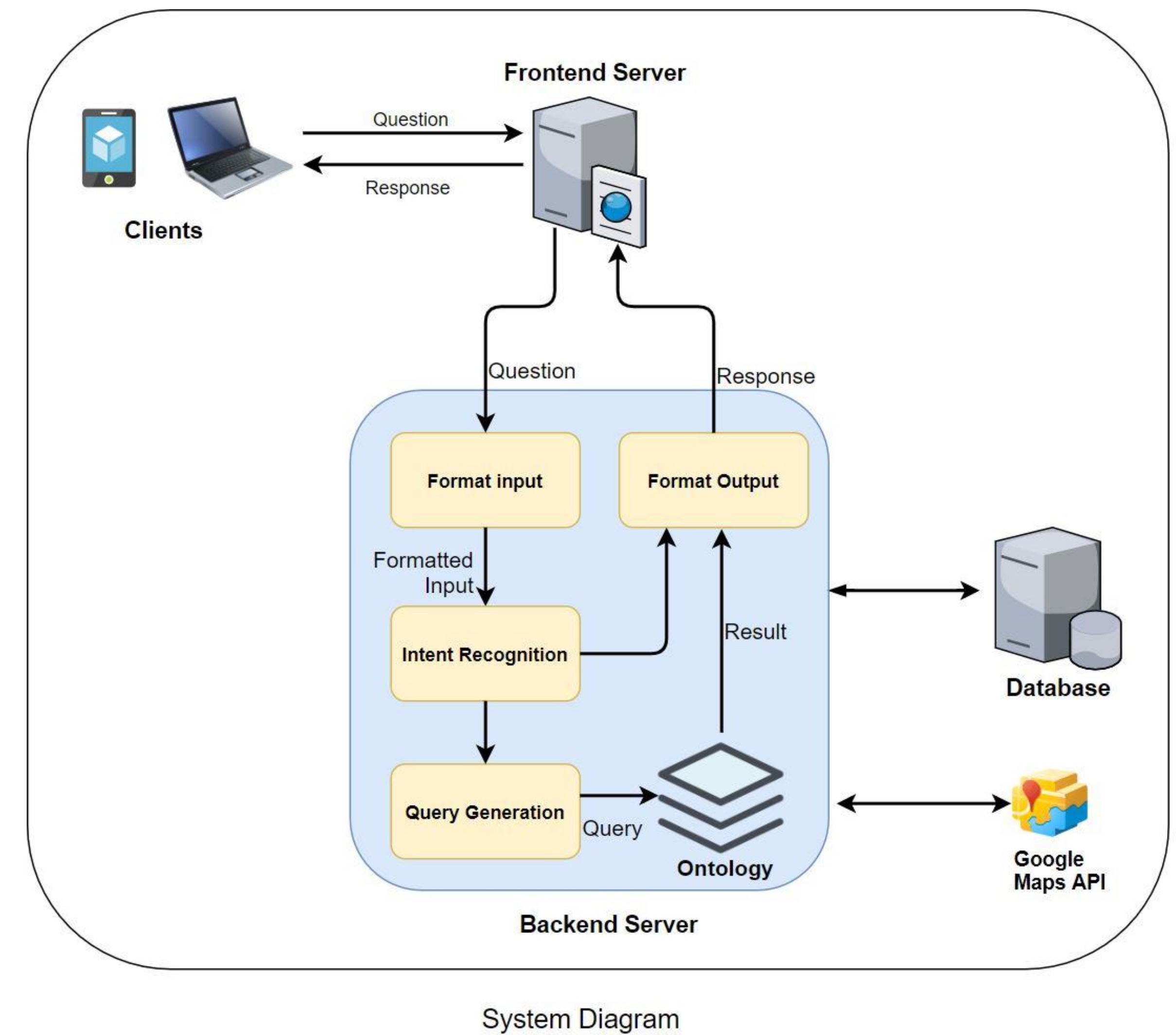
- There are some chatbots available giving you legal assistance but have several downsides.

Feature	PaperStreet 	Ailira 	LawBot 
1) Conversation Based	✗ - Structure Based	✗ - Structure Based	✓ - like talk to another human
2) Answers user's questions	✗ - Need to go through a lawyer.	✓ - But for bigger legal solutions, need to go through a lawyer.	✓
3) Voice support	✗	✗	✓
4) Free	✗	✗	✓

- Researches have been done on chatbots in different areas focused on different community services.
- Only one research done for chatbots made specifically for legal assistance. That is 'A multiagent assistant for legal research' which helps to collect and organize the statutes and case histories relevant to a legal search.

Methodology

- Lawbot is designed as a web application. It can be used from desktop, laptop or smartphone.
- User's question is analysed within the server using NLP techniques like sentimental analysis, tokenization, named entity recognition and normalization.
- To get the answers for user's questions, '**ontology**' is used as the information source.
- To map the ambiguous words in the user's question to the words already defined in the knowledge base, '**text clustering**' is used.
- As the suitable text clustering algorithm, k-means clustering using tf-idf vectors with the scikit-learn implementation, a machine learning algorithm is used.
- Finally, the question which is analysed using NLP and mapped using ML is directed to the knowledge base to query and find the appropriate answer.
- Answer is again converted to human understandable format using NLP.
- If there are documents involved with that user's specific legal issue, user is asked if he needs the documents and if the user gave the approval, he is directed to the necessary documents.
- If user requests for directions of the locations related to his legal issue, Lawbot provides the directions using google map API.



Discussion

- Lawbot has filled so many existing gaps in the available chatbots and researches that have been done in the context of chatbots.
- Unlike most available chatbots, Lawbot is not structure based. It's more conversation based.
- Lawbot is trained to possess the ability to answer any unexpected and ambiguous questions.
- For the clustering, K-means is chosen since in the context of text data, it is suitable and fast when we have an approximation of the clusters number and when the similarity measure is not expensive in terms of computation time.
- Most of the existing chatbots are made specifically for law firms, which will direct the user to contact a lawyer by providing lawyer's details.
- Lawbot is the only legal assistant chatbot available which supports voice as well. Therefore, a disabled person also has the ability to use the Lawbot with voice.

Conclusion

Purpose	Constraints at the moment	Future Enhancements
<ul style="list-style-type: none">•With Lawbot, we hope people will be more aware of the existing laws and legal system in Sri Lanka.• And they will be able to find information related to legal issues easily.•Intended for the use of only Sri Lankan citizens and tourists who would like to get an idea about the current laws in Sri Lanka pertaining to a legal scenario.•All the solutions and answers that provided by the Lawbot are in the context of Sri Lankan laws and might be different to a law which is applied in a different country pertaining to the same legal scenario.	<ul style="list-style-type: none">•Support other different legal areas which are frequently asked by people•Add a social platform to the Lawbot where people can share and discuss their ideas, incidents related to different legal areas.•Will be integrated with messaging platforms like Facebook, Viber etc.	<ul style="list-style-type: none">•Will support only English•Current laws will not be updated in the Lawbot at the same time the laws were amended until an admin manually update the knowledge base•Will assist you only in the legal areas that is it currently supporting