Case Study on Chatbot

Conversations are the key driving force of modern businesses for customer interaction. There is a shift in the way people are interacting with technologies, brands, and devices. As messaging apps outpace social media networks in terms of active users, businesses are increasingly aiming at delivering conversational experiences to their customers through chatbots and voice-enabled applications. Chatbots have been proven to drive user adoption of technologies and has the power to significantly improve user satisfaction and better delivery of services across organizations. Customer interactions through chatbots can help in getting better insights of end users. AI-powered chatbots are automated and fast. It's is scalable and can enable several customer interactions at the same time. This takes the burden away from the manned call centres. It also can reduce processing time.
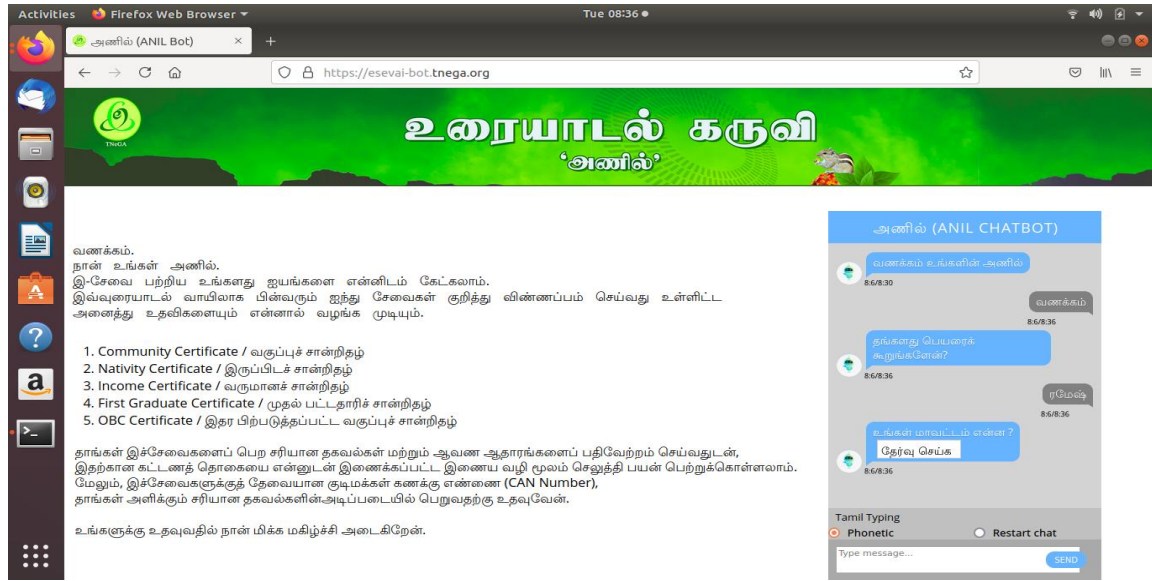
Business Challenge

The beneficiary of our product is one of the government departments involved in e-governance. And the actual beneficiaries are the citizens of the state. Tamil Nadu e-Governance Agency (TNeGA) is the provider of various citizen services through the common service centres (CSCs) or E-Sevai centres. TNeGA is mandated to provide and support all e-Governance initiatives of Government of Tamil Nadu. This also operates a call centre to answer the citizen queries such as status of their applications, procedure for applying for revenue services such as caste certificate, income certificate etc. The number of calls is very huge and also the e-Sevai centres have the limitations as people have to go there to get access to the services. There was a great need to have automatic bot which can talk/chat with the citizens (the end users) in their own language and help them to fill and file the applications without human intervention and reduce the work load of the call centre and also provide to end users ease of use. Most of the end users are not computer savvy, and do not know English.

Our Solution

The AU-KBC Research Centre's Computational Linguistics Research Group (CLRG) provided the solution to TNeGA by developing a chatbot to help citizens fill the applications by conversing in Tamil. This chatbot is to help and assist the citizens to get their government certificates. It is an AI/NLP driven chatbot having conversations in Tamil. The users can converse in Tamil, their native language. The chatbot is trained using machine learning techniques and language models are generated to handle conversations in Tamil and assisting in filling up the forms. This is an end-to-end solution which also integrates the payment gateway for the users to finally pay and file the applications. Following are the main features of this chatbot:

a) Consists of Dialogue Manager to handle conversations in Tamil, and filling up of the forms.
b) Tamil input through inbuilt phonetic keyboard.
c) Generation of PDFs of the forms.
d) Authentication through mobile number linking through OTP generation.
e) Payment gateway integrated for payment of application filing fees.

The major feature of this solution is that it is completely indigenously made and not a customisation of any open source chat engines such as RASA or Botpress. This technology can be easily customized for various domains/verticals and languages. The architecture is language and domain independent. This is scalable and robust. Below is the snapshot of the Chatbot.

உரையாடல் கருவி
'அணில்'

வணக்கம்.
நான் உங்கள் அணில்.
இ-சேவை பற்றிய உங்களது ஐயங்களை என்னிடம் கேட்கலாம்.
இவ்வுரையாடல் வாயிலாக பின்வரும் ஐந்து சேவைகள் குறித்து விண்ணப்பம் செய்வது உள்ளிட்ட அனைத்து உதவிகளையும் என்னால் வழங்க முடியும்.

1. Community Certificate / வகுப்புச் சான்றிதழ்
2. Nativity Certificate / இருப்பிடச் சான்றிதழ்
3. Income Certificate / வருமானச் சான்றிதழ்
4. First Graduate Certificate / முதல் பட்டதாரிச் சான்றிதழ்
5. OBC Certificate / இதர பிற்படுத்தப்பட்ட வகுப்புச் சான்றிதழ்

தாங்கள் இச்சேவைகளைப் பெற சரியான தகவல்கள் மற்றும் ஆவண ஆதாரங்களை பதிவேற்றம் செய்வதுடன், இதற்கான கட்டணத் தொகையை என்னுடன் இணைக்கப்பட்ட இணைய வழி மூலம் செலுத்தி பயன் பெற்றுக்கொள்ளலாம். மேலும், இச்சேவைகளுக்குத் தேவையான குடிமக்கள் கணக்கு எண்ணை (CAN Number),
தாங்கள் அளிக்கும் சரியான தகவல்களின்அடிப்படையில் பெறுவதற்கு உதவுவேன்.

உங்களுக்கு உதவுவதில் நான் மிக்க மகிழ்ச்சி அடைகிறேன்.

அணில் (ANIL CHATBOT)

வணக்கம் உங்களின் அணில்
8:6/8:30

வணக்கம்
8:6/8:36

தாங்களது பெயரைக் கூறுங்களேன்?
8:6/8:36

ரமேஷ்
8:6/8:36

உங்கள் மாவட்டம் என்ன ?
தேர்வு செய்க
8:6/8:36

Tamil Typing
○ Phonetic   ○ Restart chat
Type message...   SEND

Benefits to the Customer (TNeGA):

This is an end-to-end solution, encompasses all the required features and technology for user interaction.

a) This reduces the load on the call centre by atleast 40%. Thus manpower can be used for more productive work.
b) The applications are auto filled by the chatbot through the conversation with the user. And a PDF is generated for the user to cross-check. If any errors found, the user can do the necessary corrections through the chat. Thus reduces the errors.
c) This can be operated 24/7.
d) Easy way of authentication, OTP generated through mobile number. No login required
e) As payment gateway is integrated, online payment is made easy.

Why AU-KBC

The Computational Linguistics Research Group (CLRG) at AU-KBC Research Centre works on the scientific study of language from a computational perspective. We develop computational models of various linguistic phenomena, with the aim of building practical natural language processing systems. Our research interests span a broad range of topics in Computational Linguistics and Natural Language Processing. Our work has combination of traditional and contemporary linguistic knowledge based approaches with statistical and machine learning methods. We work at intra and inter sentential (Discourse) level. At the Discourse level we do cognitive analysis of discourse such as coherence analysis, anaphora and connective resolution etc. The CLRG group has vast experience of more than 20 years in the field of Discourse and conversation analysis. The Lead Scientist has more than 30 years of experience in the area of discourse analysis and specialises in Discourse Anaphora and Coreference resolution. The group has worked with multinational companies such as Microsoft, Oxford University Press UK, Emudra, Zowdow Inc in providing AI/NLP solutions. The group has R&D collaborations with several Indian and International Universities and research centres such as IITs, IISc, IIIT-Hyderabad, University of Wolverhampton UK, University of Valencia Spain, Know Centre Austria, Indiana University USA, University of Aegean Greece, University of Weimar Germany, and University of Morotowa Srilanka.