CoRover®

Conversational AI Platform
ChatBot as a Service (CaaS)®

Technical Specification Document
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Contents

1. Introduction

CoRover®, an award-winning Conversation AI Platform, provides Digital Assistants, to improve sales; save cost (33%); reduce support activities (70%) and improve customer/employee engagement & satisfaction.

CoRover powered ChatBot as a Service (CaaS) has Video, Audio, Text (Multi-lingual) Chatbot Solutions based on Artificial Intelligence, Machine Learning & Natural Language Processing, for enterprises. Integration in Web, iOS & Android takes just 10 minutes. Patent is Applied | ISO 9001:2015 | ISO 27001:2013

A few of our customers include IRCTC, Indian Railways, KSRTC, NPCI, VRL, SRS, Orange Ltd and more, which makes it the most accessed Enterprise Chatbot of the world having 58 million+ users.

1.1   Purpose of the document

CoRover AI Chatbot solution is built using cutting edge technology to create platform agnostic Chatbot. It is multilayered processing architecture using NLP, AIML and different algorithm. Multiple component is developed in different language such as Java, python to get best of each world to build the platform. Framework integrates with different platform for speech synthesis and multilingual support. Framework support integration with client APIs.

1.2   Tools and Technology

- NLP
- Machine Learning
- AIML (Artificial intelligence markup language)
- Fuzzy search
- Deep Learning
- Elastic Search

OS and Platform	Windows, Linux (RHEL), Android, iOS
Language	Python, Java, HTML, CSS Java Script, Swift, Android
Database	MySQL, MongoDB, SQLLite

1.3   Support

- Multi-Lingual
- Multi-Channel
- Audio/Video Conversation
- Client/Third-Party API integrations

1.4   Deployment Options

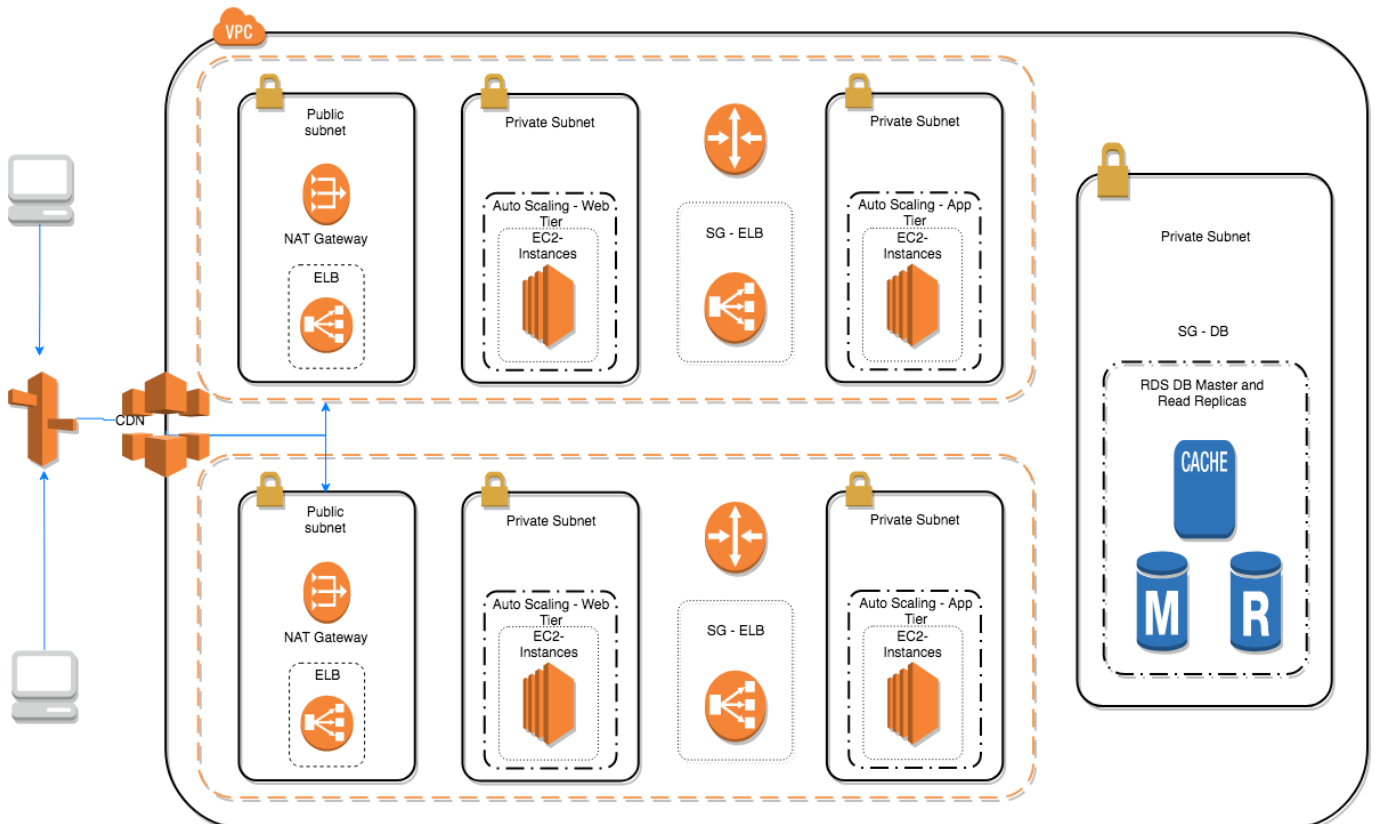- SaaS
- Cloud – Dedicated
- On-Premise

1.5   Analytics Dashboard

Dashboard build on Elastic search and Kibana provides real time metrics which helps client to sees the usage pattern and cost benefit analysis. It provides detailed report of each use case – queries asked, responses, accuracy, feedback and more.
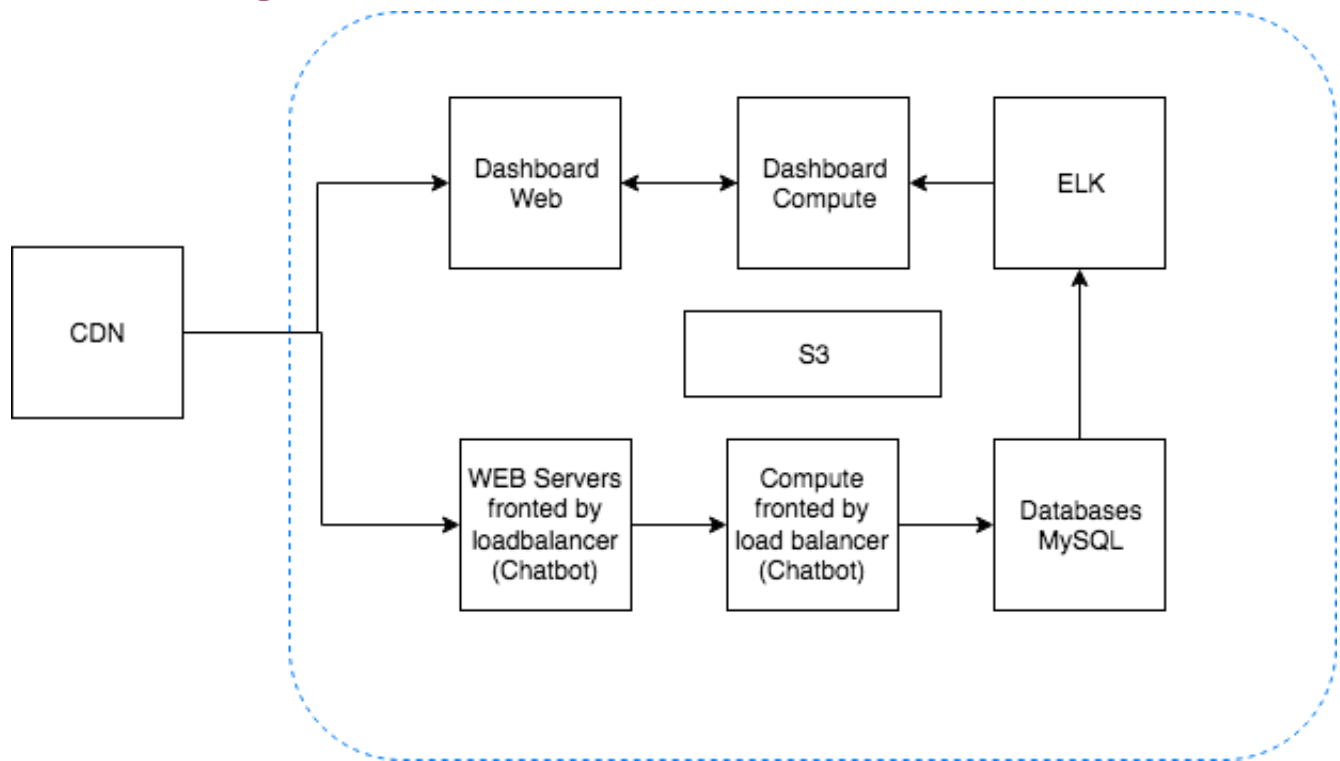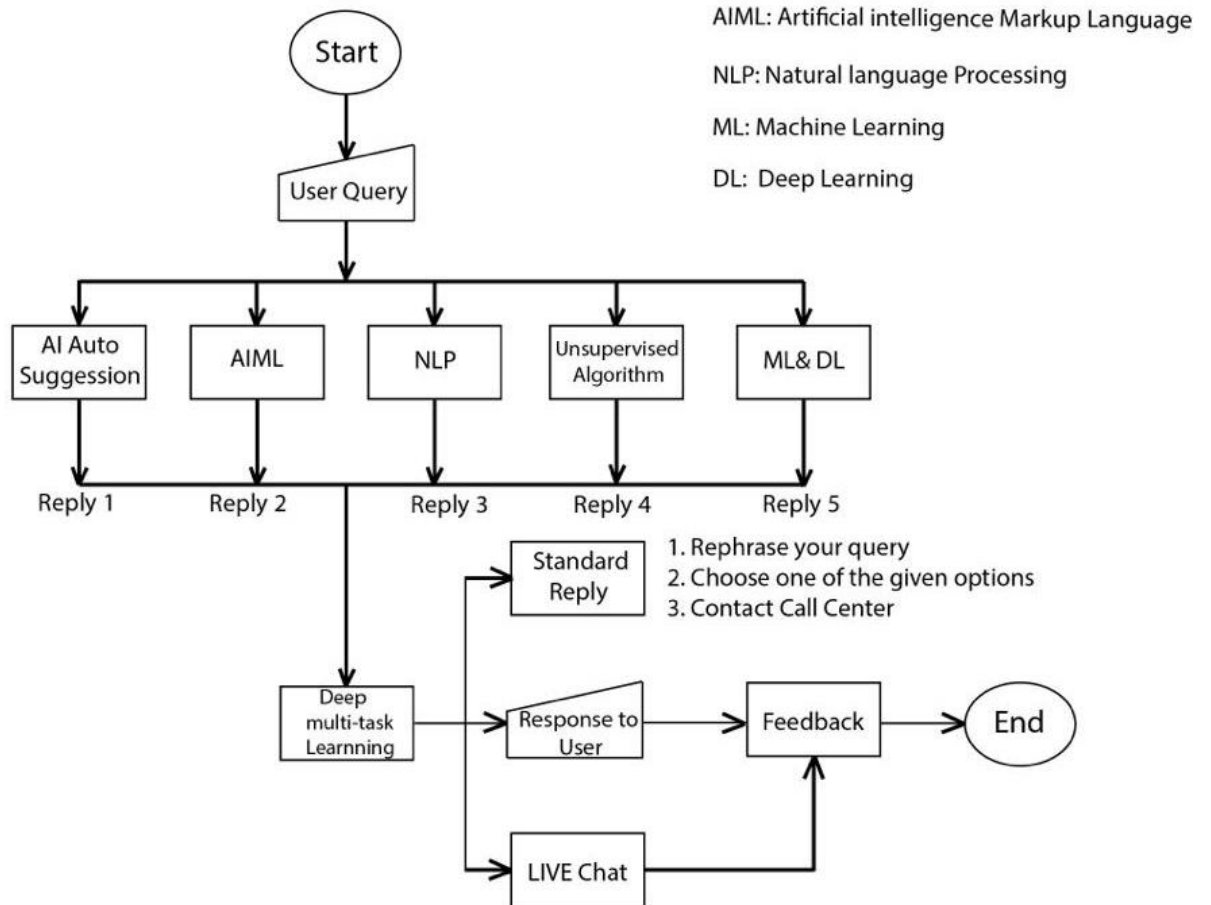
2.Logical Architecture
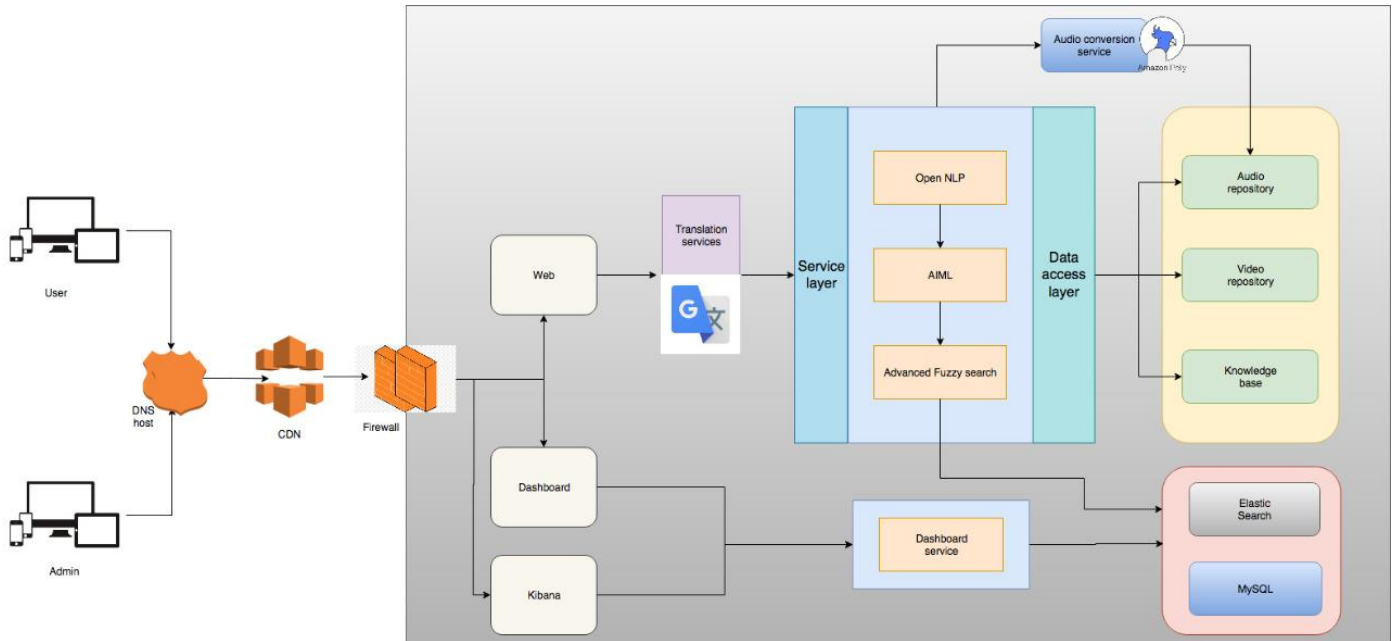
3. System 3-Tier Architecture

4.Flow Diagram

5.CoRover Cognitive AI Framework

User initiate query from various interfaces, our Chatbot backend takes user query and pass it through various layers of our framework:

1. AI Auto-Suggestion - Auto Suggestion feature of Chatbot: when a user asks their query on Chatbot then Chatbot pop-up (suggest) the predefined queries by taking keywords from User Query and if the user query is a direct match to the asked query then it reflects the answer otherwise it is passed to AIML layer. In brief, AI takes key words and matches the similar query, and based on these keywords AI engine makes suggestion.

2. AIML (artificial intelligence mark-up language) - AIML is a text-based scripting language meant to aid in the development of interactive Chatbot. The AIML pattern syntax is a very simple pattern language, substantially less complex than regular expression and as such less than level 3 in the Chomsky hierarchy. To compensate for the simple pattern matching capabilities, AIML interpreters can provide pre-processing functions to expand abbreviations, remove misspellings, etc.

3. NLP - Natural Language Processing applies algorithms to understand the meaning and structure of sentences.

Syntactic and semantic analysis are two main techniques used with natural language processing. Syntactic techniques include:
> Parsing (grammatical analysis of sentence)
> Role labeling and understanding discourse
> Tokenization (splitting the sentence into words)
> Semantic analysis techniques includes:
> Understanding deeper meaning
> Context analysis
> Disambiguation analysis

4. Unsupervised Algorithm - It implies that the model can be trained directly from historical chat log data (transcripts), without the need for any human labeling. If the aim is to primarily build a Q/A system, we can treat conversations as input Q/A pairs, where each sentence in the conversation is both an answer to a previous sentence, and a question to the next sentence; that is, each sentence appears in two Q/A pairs.

5. ML and DL - in this layer the feedback data and question is collected and through this data our machine uses deep learning to upgrade its responses.

6. Deep Multitasking learning - Multi-Task learning brings human kind of learning to our framework, like human brain multitasks to focus on each word, then sentence and then previous sentences to drive deeper understanding, similar is done by Deep multitask learning. Primarily, it makes sure each word, context, current sentence and also the learning from other layers are consolidated well to deeper and better learning.

Then chatbot gives three types of responses:
1. Standard Reply - if the Chatbot didn't understand the query. It gives a response to modify the query or let user choose from the various options.
2. Response to user - if the Chatbot understand the query. It would give the appropriate response.
3. Live Chat - if the Chatbot didn't understand the query or further assistance is needed to customer the chat bot can open a live chat, where the customer can directly chat to customer care employee.

6.Feedback

This is the most important part of the Chatbot. As the Chatbot gathers all the data and feedback and the Chatbot learns and upgrades itself.

7.Miscellaneous Details

i. ## Bot Type

Query & Reply can be in the form of:
- Text
- Voice
- Video

ii. ## Multi-Language

Query & Reply can be in:
- Vernacular/Regional Languages
- Foreign Languages.

iii. ## Multi-Channel

Query can we from any channel:
- Web – Desktop
- Web – Mobile
- Android App
- iOS App
- Social media channels

iv. ## Multi-Type Response

- Static Text
- Dynamic Text
- Live Chat
- Rich Text
- Multimedia (Photo, Audio, Video, Maps, PDF, URL etc.)
- API response from internal/external systems

Thank You

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