

ERIC: Emotionally Reliable and Intelligent Chatbot

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Summary

- Proposed an extendible logical architectural framework for developing chatbot
- Showcased prototype implementation of the framework, viz. a chatbot for children.

Introduction

- Chatbot is a software for verbal or textual communications
- Global chatbot market to grow to \$454.8 million by 2027¹.
- Low code toolkits emerged for quick & easy time-to-market of chatbots (e.g., Dialogflow^{2,3}, MS's bot, Watson, Lex).
- These Chatbot dev tools can be integrated with custom app
- Studies suggest that a chatbot may help a child express emotions⁴ and deal with issues like online bullies⁵
- RQ1:** What are the critical features and design principles of an emotionally intelligent chatbot for children?
- RQ2:** Can we utilize recent chatbot dev toolkits with NLP to propose an architectural framework that is scalable and adaptive?

Proposed Framework

- Front-end:** Dialogflow provides textual platforms and integration with G. Assistant to offer verbal communications.
- Dataset:** Chatbot's emotional reliability & intelligence come from the rich quantity of conversations that a user may have.
- Backend:** consists of an NLP model (brain) trained on dataset (past experiences)
- Integration:** Flask is a small & lightweight web framework with features that allow easy creation of apps in Python.

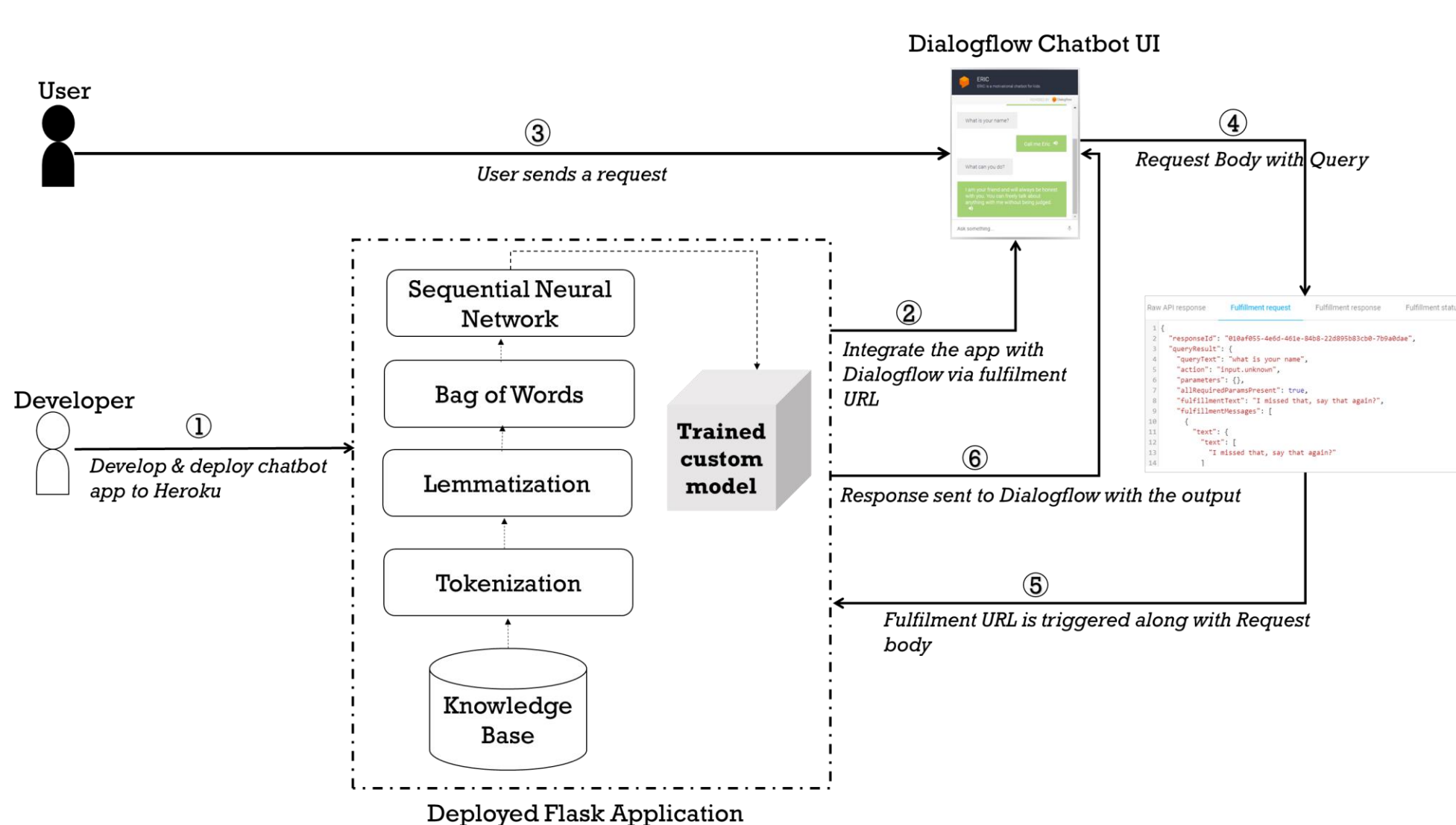


Fig. 1: Development and Conversation Flow

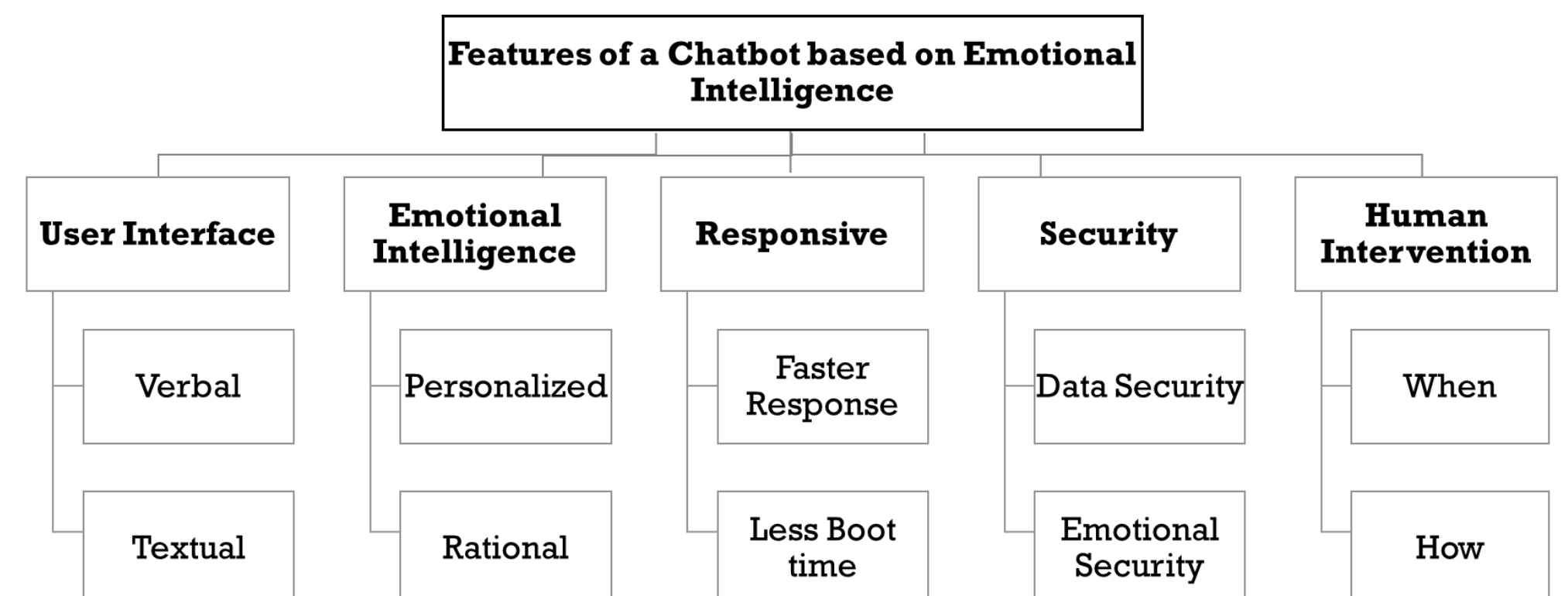


Fig. 2: Chatbot Features

Implementation

- An agent⁶ is created on the Dialogflow console
- The chatbot receives the user's textual/voice-based utterance ("talk to Eric").
- Dialogflow/Assistant's internal speech recognizer transforms the voice input into a textual query which is then sent as a POST request to the Python-based flask application (resides a trained model)
- The trained model returns an appropriate response to the Dialogflow runtime based on the recognized intent.
- Finally, the Dialogflow shows the response on screen or converts the text response into speech.

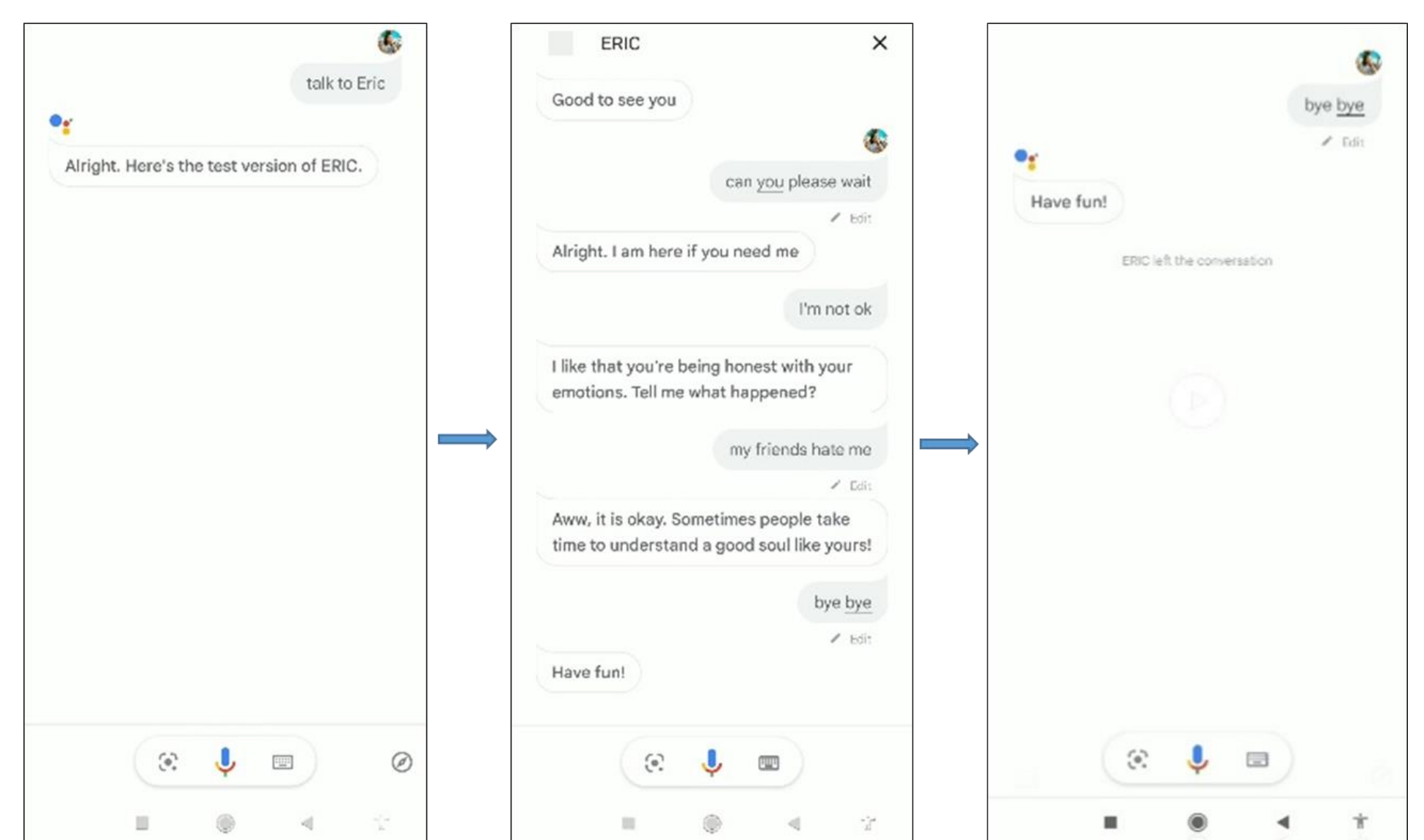


Fig. 3: Google Assistant (Voice) based conversation

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