Ubiquitous and Mobile Computing
CS 528 - Tech Talk

ML Kit - Smart Reply

Team 1

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Background

- Began as a project to automate short emails answered on mobile.
- Study showed that 25% of replies had 20 tokens or less
- Questions
  - Can we assist users with composing short messages?
  - Can we suggest brief replies that can be used with a single tap?
Problems it’s Designed to Solve

● Reduced response time.

● Ease of replying on a mobile device with just a tap.
Real world examples

- Inbox by Gmail.
- Google Allo, an instant messaging mobile app (shutdown).
- Pretty much available for all messaging apps (built into Android 10 and onwards).
- Responsible for assisting with 10% of all mobile responses.
Example Use Cases

- Email Apps - Replies to emails
- Messaging Apps - Replies to messages
- Chat Bots - Replies to tech queries.
How it works: An Overview

- Considers 10 most recent messages from conversation history.
- Suggests 3 relevant Responses.
- Provides responses for English language only.
- No responses provided when sensitive topic is detected.
The Message Flow

Code snippet: Walk through simple example

1. Create conversation history object (incoming and outgoing)

```java
conversation.add(TextMessage.createForLocalUser("heading out now", System.currentTimeMillis()));

conversation.add(TextMessage.createForRemoteUser("Are you coming back soon?", System.currentTimeMillis(), userId));
```
Code snippet walkthrough (continued)

2. Generate smart replies

```java
SmartReplyGenerator smartReply = SmartReply.getClient();
smartReply.suggestReplies(conversation)
   .addOnSuccessListener(new OnSuccessListener() {
       @Override
       public void onSuccess(SmartReplySuggestionResult result) {
         if (result.getStatus() == SmartReplySuggestionResult.STATUS_NOT_SUPPORTED_LANGUAGE) {
             // The conversation's language isn't supported, so
             // the result doesn't contain any suggestions.
         } else if (result.getStatus() == SmartReplySuggestionResult.STATUS_SUCCESS) {
             // Task completed successfully
             // ...
         }
       }
   })
   .addOnFailureListener(new OnFailureListener() {
       @Override
       public void onFailure(@NonNull Exception e) {
         // Task failed with an exception
         // ...
       }
   });
```
3. On success

```java
for (SmartReplySuggestion suggestion : result.getSuggestions()) {
    String replyText = suggestion.getText();
}
```
References

Thank You