Smart Reply - Google

Smart Reply saves the time by suggesting quick responses to the messages. The feature already drives 12% of replies in inbox on mobile. Smart replies are coming for Android and iOS too. It suggests 3 responses based on the email received. Once selected, we can send it immediately or edit the response starting with the Smart Reply test. Both cases will save time.

Each module processes inputs and provides transformed representations of those inputs on its outputs. In the Smart Reply system, two layers of hierarchy are there. The first makes each feature useful as a predictor of the final result, and the second combines these features. Also considered, the mathematical space of these vector representations is implicitly semantic.

Smart Reply system consists of Response selection, Response set generation, Diversity and triggering model.

Response System - An LSTM neural network processes an incoming message, then uses it to predict the most likely responses.

Response set generation - Select responses from response space which is generated offline using a semi-supervised graph learning approach.

Diversity - After LSTM, choose a small set to show to the user that maximizes the total utility.

Triggering model - A feedforward neural network decides whether or not to suggest responses.

Steps involved are:-

1. Selecting responses - Construct a model that can score responses and then find the highest scoring response.
2. The first step is to automatically generate a set of canonical responses messages that capture the variability in language. Then partition all response messages into “semantic” clusters where a cluster represents a meaningful response intent. Construct a base graph with frequent response messages as nodes. The constructed graph captures relationships between similar canonicalized responses via the feature nodes. Then do the cluster validation.
3. Omit redundant responses. Negative responses receive less score.
4. Triggering module is applied to every incoming email just after the preprocessing step. If the decision is negative, we finish the execution and do not show any suggestions .After preprocessing, extract content features from the message body, subject and headers.
5. Then, evaluate different components of the Smart Reply system and present overall usage statistics