Thesis Proposal

Title: A virtual assistant for web dashboards

Scope: Client Insight Analytics (CIA) team develops algorithms to mine clients' data. Resulting information is presented to sales teams members as dashboards or alerts. In general, dashboards do not provide enough context information and users are forced to contact CIA team members if they have questions. The goal to have a virtual assistant that supports dashboard users, answers their questions, points them to related information sources, or alerts them about anomalous situations

Objectives: The assistant should take a natural language question and determine the most appropriate answer. In case it cannot provide an answer, it should log the event so someone from the CIA team can analyse it.

Examples of questions the assistant should be able to answer are the following:

- Dynamic calculations:
    - Q: "What was the hit ratio of client X during June last year?"
    - A: (A numeric value is displayed)
- Dashboard state change requests:
    - Q: "Show me the history of client X trades"
    - A: (CIA assistant responds that it understand and launches a dashboard chart with appropriate dimensions and measures)
- Dashboard context questions:
    - Q: "How is the client hit ratio calculated?"
    - A: "It is the number of RFQ deals done divided by the number of RFQS received"
- Transversal questions:
    - Q: "How do I download data into excel?"
    - A: CIA assistant gives instructions or launches a relevant video

The assistant should be able to initiate conversations with users if data contains relevant features, e.g. if a client's performance goes below a certain threshold.

Dashboard users should be able to evaluate the answers provided by the assistant, constraining the assistant learning algorithm. The assistant answers quality is expected to improve over time.

Description:

1. Decide what learning algorithms to consider and use data features, dashboard metadata and users feedback as input.
2. Determine how to extract relevant data features and how to organize dashboards metadata (e.g. dashboard context information).
3. Determine the application architecture and what libraries and frameworks to use. For instance, there are several bot development frameworks such as chatterbot and natural language processing libraries such as NLTK.
4. Develop a prototype that demonstrates the assistant's different functionalities.
5. Integrate the assistant with tableau web dashboards, using the dashboards API to modify their state.

Expected Results:
1. A web dashboard interface containing an assistant dialog container.
2. A virtual assistant that answers users questions and improves the answers accuracy ratio over time.

Observations:
1. The assistant's backend should be developed in python to be easily integrated into the CIA infrastructure

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