AI based Digital Assistant
Compliance in Banking

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Agenda

- Problem
- Deep Learning & NLP Solution
- Digital Assistant
- Solutions in this area
- Demo
- What’s Next?
Problem: Compliance in Banking

- Time for Compliance Implementation Projects
- Cost of Compliance Checks and Certification
- Quality of reporting Compliance Violations
- Ensuring Governance for Compliance checking
- Internal Controls not sufficient for monitoring
- Compliance certified professionals readily not available

SOX, Basel II, IFRS, MiFID, SEPA, AML, KYC
Deep Learning & NLP Solution
Deep Learning: Introduction

- Social Dynamics
- Deep networks
- Image segmentation
- Recommendation engine
- Collaborative Filtering systems
- Detecting Emotions from Photos
- Facial Recognition
- Body Language and Moods detection
Natural Language Processing

- Providing bank employees the content
- Using predictive coding based on documents
- Allowing clients to perform tasks directly
- By extracting content from bank documents
- Populating due diligence summary templates
- Automates the account opening & client onboarding process
- Exporting abstracts to different formats
- Extracts critical information from contracts
### Sentimental Analysis

The process of understanding the emotional content involves analyzing text to determine whether it conveys positive or negative sentiments. The table below lists some common positive and negative evaluation words:

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Bad</td>
</tr>
<tr>
<td>Great</td>
<td>Worse</td>
</tr>
<tr>
<td>Fantastic</td>
<td>Rubbish</td>
</tr>
<tr>
<td>Excellent</td>
<td>Sucked</td>
</tr>
<tr>
<td>Friendly</td>
<td>Awful</td>
</tr>
<tr>
<td>Awesome</td>
<td>Terrible</td>
</tr>
<tr>
<td>Enjoyed</td>
<td>Bogus</td>
</tr>
</tbody>
</table>

#### Math Formulas

1. An extracted aspect that is modified by many evaluation words is more likely to indicate an evaluative sentence.
2. An extracted aspect that is modified by many emotion words is not a good indicator of an evaluative sentence.
3. An evaluation word that does not modify good (high scored) aspects are likely to be a wrong evaluation word.

Aspects, evaluation words and emotion words interaction:

- **Aspects**
- **Evaluation words**
- **Emotion words**

Math formulas:

- \( \text{asp}(a_j) = \sum_{i \in \text{evaluation} \land a_j \in \text{aspect}} \text{eval}(a_i) \)
- \( \text{val}(a_j) = \sum_{i \in \text{emotion} \land a_j \in \text{aspect}} \text{emo}(a_i) \)
- \( \text{emo}(a_j) = -\text{tmp}(\text{emo}(a_j)) \)
- \( \text{max} = \max(\text{tmp}(\text{emo}(a_1)), \text{tmp}(\text{emo}(a_2)), \ldots, \text{tmp}(\text{emo}(a_n))) \)
Digital Assistant
Digital Assistant

Show us the customer report! Search for customers

Request

HTTP(S)

Google DialogFlow

Response

django

generated report!

Search Results
Architecture

Visualization Layer

Service Layer

Data Access Layer

Standard Reports
Dynamic Reports
Custom Reports
Searches
Query Builder
Platform Features

- **Queries**
  - keyword based queries
  - reports in various formats
  - search results

- **Data Access**
- **Service**
- **Commands**
  - NLP based analysis

- **Web**
- **Mobile**
Challenges

- browsers compatibility
- mobile os dependency
- desktop os issues
- speech hardware issues
AI Deep Learning Platform

- Deep Learning Based
- Historical Data is used for prediction and identifying patterns
- Neural Network Algorithms are used
- Image Processing and Natural Language Processing Based Features

- Ensuring Auditability
- Ensuring Security
- Ensuring Privacy
- Ensuring Compliance
- Prevention of identity theft, money laundering and extortion

FERC, CFTC, NERC, HIPAA, SOX
FISMA, FERPA, PCI-DSS, GLBA
PATRIOT ACT, KYC
Use Cases in Banking

- Advisor for Wealth & Investment Management
- Digital Assistant for Consumers
- Virtual Advisor
- Chat Bots
- Fraud Detection
- Threat Detection
- Multi Channel Information Analysis
- Social Media Monitoring
- Privacy Protection
Are you the only one doing this ??
AWS Lex
IBM Watson
Demo
Minimal Version

Reports
Search
English Language
web app
Enhanced Version

Reports
Search
French Language
Web app
Knowledge Assistant
Enhanced Version

Demo

bonjour monsieur
What’s Next

Locational Intelligence

Social Media

Quantum Natural Language Processing (QNLP)

Knowledge Base

Vertical Specific Knowledge

Content Management

Voice

Human Experts