

FRAUNHOFER INSTITUTE FOR INDUSTRIAL ENGINEERING IAO

MAKE YOUR CUSTOMERS HAPPY AGAIN: AI AND NLP FOR A COMPLAINT MANAGEMENT PLATFORM

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MOTIVATION

Companies often have to treat a large number of messages and complaints coming from their customers. Software solutions that automatically analyse the incoming messages, classify them by topic and extract relevant information are thus helpful.

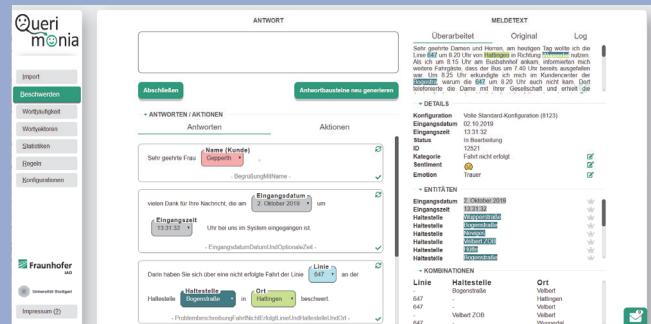
PLATFORM CONCEPT

Customers can send complaint messages to the platform either directly or via a chatbot. A new complaint message is analysed by several machine-learning and rule-based classifiers and extractors. Based on the results, several rules fire to suggest answer building blocks. A platform user can then view the suggested answer blocks, select them or edit them to compose the final answer text and send the answer back to the customer or trigger further actions (such as sending a voucher).

FUTURE WORK

Querimonia is currently a working prototype. Future improvements include:

- More easily configurable extractors and classifiers
- Integration with external databases to generate context-aware answer messages
- Further automation of answer generation
- Integration with more communication channels



The screenshot shows a web-based application interface for 'Querimonia'. On the left, there's a sidebar with navigation links: Import, Beschwerden (Complaints), Wortschatz, Worttypen, Statistiken, Bericht, and Zertifikationen. The main area has tabs for 'ANTWORT' (Answer) and 'ACTIONS'. Under 'ANTWORT', there's a text input field and a 'Abschließen' (Close) button. Below it, a section for 'ANTWORTEN / Aktionen' (Answers / Actions) lists a single item: 'Sehr geehrte Frau [Name (Kunde)]'. There are buttons for 'Bearbeiten' (Edit) and 'Entfernen' (Delete). To the right, there's a 'DETAILS' panel with fields like 'Eingangsdatum' (Entry date), 'Eingangsstelle' (Entry location), 'Status' (Status), 'Kategorie' (Category), 'Beschreibung' (Description), and 'Emotion' (Emotion). A 'MELDETEXT' (Report text) section contains a message about a bad driver. At the bottom, there's a 'KOMBIINATIONEN' (Combinations) section with tables for 'Linie' (Line), 'Haltestelle' (Stop), 'Ort' (Location), and 'Qrt' (Quarter). A 'Fehler' (Error) icon is visible at the bottom right.

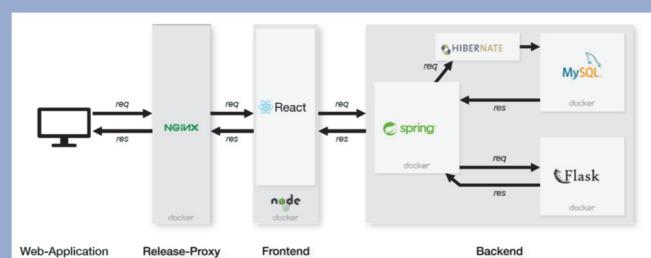
Semi-automated answer generation in Querimonia,
our complaint management platform

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1 <Rules>
2   <And>
3     <Predecessor matches="Eingangsdatum.*" position="last"/>
4     <Property name="Kategorie" matches="Fahrer unfreundlich"/>
5     <Not>
6       <EntityAvailable label="Haltestelle"/>
7     </Not>
8     <Not>
9       <EntityAvailable label="Ort"/>
10    </Not>
11    <EntityAvailable label="Linie"/>
12  </And>
13 </Rules>

```

An example rule to select response block elements based on extracted information and classification results



Architecture of the Querimonia platform