Development of a Recommender Systems for a CRM

Predicting the outcome of sales and recommending actions

Graduate Candidates

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Introduction: The Knowledge Transfer Unit (WTT) at the OST is responsible for coordinating practical projects that form an integral part of the undergraduate business program. Through the WTT, a wide range of projects have been acquired and overseen, specifically focusing on designing and implementing Customer Relationship Management (CRM) systems in collaboration with industry partners.

A CRM system serves as a comprehensive repository for documenting all interactions between a company and its customers, including both existing and potential ones. The utilization of this data plays a crucial role in acquiring new customers, managing post-sales activities and enhancing marketing strategies. However, the automated analysis of these substantial data sets poses significant challenges. To address this challenge, the objective of this thesis is to develop a recommender system for the salespeople. This system aims to estimate the probability of a particular sale and subsequently to provide recommendations for the salespeople based on the analysis of past sales, thereby assisting in identifying the most compelling activity to ensure the customers satisfaction.

Approach: The developed solution uses a variety of machine and deep learning models, which are able to predict the probability of a sale and from that sale give suitable recommendations to the salespeople.

Before delving into the customer data, a recommendation system for a book recommender was built in order to understand how recommendation systems are constructed. This recommendation system is able to provide suitable recommendations for future books to be read. The data was acquired from the book crossing data set.

Subsequently, the company data was prepared and processed so that a machine and deep learning model could be trained. It took several iterations until the data was of an acceptable quality and the accuracy and precision of the predictions were sufficient.

Result: As this thesis shows, it is possible to predict the probability of a sale and provide recommendations from various activities so that the probability of the sale increases. The accuracy and precision of our predictions for both models were over 80%.

Furthermore, a web interface was implemented for ease of use of the recommendation system and a visualization of the increase for different activities was shown. The web interface includes various services, such as a sale prediction and recommendations

how to improve the sale probability, a timeline which shows all activities and sales for each customer and various useful diagrams for an overall insight into the data.

Prediction of a sale for an account.
Own presentment
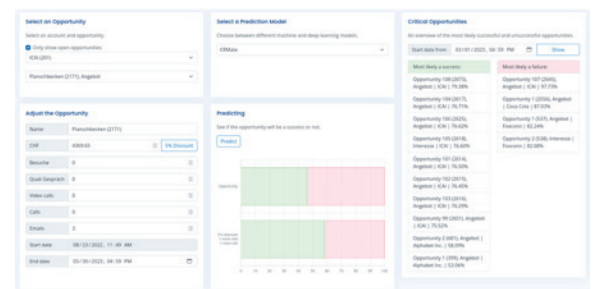
Filtered and unfiltered timeline of two accounts.
Own presentment

Insights into the data.
Own presentment

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Subject Area
Artificial Intelligence

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