**LITERATURE SURVEY**

# Opinion mining for thai restaurant reviews using neural networks and mrmr featureselection.

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# Currently, Thai restaurants are popular around the world. There are tons of reviews related to foods and services in social networking websites. These tons of customer reviews make it difficult to analyze the opinions of customer toward foods and services. To help the businesses, the model of opinion mining is proposed for classifying the reviews and to analyze the attitude of customers for improving their products and services. In this research, the artificial neural network is applied to classify the positive and negative reviews. In addition, the mRMR feature selection is used to select the features of data in order to reduce the number of features in the data set. Consequently, the computational times of learning algorithms for neural networks are reduced. The experimental results show that the neural network is an effective model for classifying the Thai restaurant reviews.

# 2) Predicting the helpfulness of online restaurant reviews using different machine learning algorithms

**AUTHORS:Yi Luo and Xiaowei Xu.**

Helpful online reviews could be utilized to create sustainable marketing strategies in the restaurant industry, which contributes to national sustainable economic development. This study, the main aspects (including food/taste, experience, location, and value) from 294,034 reviews on Yelp.com were extracted empirically using the Latent Dirichlet Allocation (LDA) and positive and negative sentiment were assigned to each extracted aspect. Positive sentiments were associated with food/taste, while negative sentiments were associated with value. This study further proves a robust classification algorithm based on Support Vector Machine (SVM) with a Fuzzy Domain Ontology (FDO) algorithm outperforms other traditional classification algorithms such as Naïve Bayes (MB) and SVM ontology in predicting the helpfulness of online reviews. This study enriches the literature on managerial aspects of sustainability by analyzing a large amount of plain text data that customers generated. The results of this study could be used as sustainable marketing strategy for review website developers to design sophisticated, intelligence review systems by enabling customers to sort and filter helpful reviews based on their preferences. The extracted aspects and their assigned sentiment could also help restaurateurs better understand how to meet diverse customers’ needs and maintain sustainable competitive advantages.

# 3 Application of deep learning in food: A review. Comprehensive Reviews in Food Science and Food Safety

**AUTHORS** **: Lei Zhou, Chu Zhang, Fei Liu, Zhengjun Qiu, and YongHe**

Deep learning has been proved to be an advanced technology for big data analysis with a large number of successful cases in image processing, speech recognition, object detection, and so on. Recently, it has also been introduced in food science and engineering. To our knowledge, this review is the first in the food domain. In this paper, we provided a brief introduction of deep learning and detailedly described the structure of some popular architectures of deep neural networks and the approaches for training a model. We surveyed dozens of articles that used deep learning as the data analysis tool to solve the problems and challenges in food domain, including food recognition, calories estimation, quality detection of fruits, vegetables, meat and aquatic products, food supply chain, and food contamination. The specific problems, the datasets, the preprocessing methods, the networks and frameworks used, the performance achieved, and the comparison with other popular solutions of each research were investigated. We also analyzed the potential of deep learning to be used as an advanced data mining tool in food sensory and consume researches. The result of our survey indicates that deep learning outperforms other methods such as manual feature extractors, conventional machine learning algorithms, and deep learning as a promising tool in food quality and safety inspection. The encouraging results in classification and regression problems achieved by deep learning will attract more research efforts to apply deep learning into the field of food in the future.

# 4 Rating individual food items in restau-rant reviews.

**AUTHORS:** **Burusothman Ahiladas, Paraneetharan Saravanaperumal,Sanjith Balachandran, Thamayanthy Sripalan, and SurangikaRanathunga**.

# Restaurant recommendation systems are capable of recommending restaurants based on various aspects such as location, facilities and price range. There exists some research that implements restaurant recommendation systems, as well as some famous online recommendation systems such as Yelp. However, automatically rating individual food items of a restaurant based on online customer reviews is an area that has not received much attention. This paper presents Ruchi, a system capable of rating individual food items in restaurants. Ruchi makes use of Named Entity Recognition (NER) techniques to identify food names in restaurant reviews. Typed dependency technique is used to identify opinions associated with different food names in a single sentence, thus it was possible to carry out entity-level sentiment analysis to rate individual food items instead of sentence-level sentiment analysis as done by previous research..

# 5) Deep learning for amazon food review sentiment analysis

# AUTHORS: Jiayu Wu and Tianshu Ji.

In this project, we study the applications of Recursive Neural Network on sentiment analysis tasks. To process the raw text data from Amazon Fine Food Reviews, we propose and implement a technique to parse binary trees using Stanford NLP Parser. In addition, we also propose a novel technique to label tree nodes in order to achieve the level of supervision that RNN requires, in the context of the lack of labeling in the original dataset. Finally, we propose a new model RNNMS (Recursive Neural Network for Multiple Sentences), and have better results than our baseline in terms of every metrics we consider.