



ZERO-SHOT LEARNING APPLIED TO A REAL-LIFE CHATBOT

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Abstract:

In recent years, natural language processing (NLP) has become one of the most interesting topics in the field of machine learning (ML). Since the expansion of artificial intelligence (AI), many industries need a way to help their customers with the problem of extracting useful information from available text sources. Therefore, NLP has found application in a wide variety of tasks such as topic recognition, information retrieval, sentiment analysis, etc. In order to train any type of supervised NLP algorithm a huge amount of data needs to be labeled. Bearing in mind that the data labeling procedure is a very expensive and slow one, the ML community has started developing algorithms based on the domain adaptation paradigm. The most well-known domain adaptation frameworks are based on the one-shot or few-shot principle. This implies that only one or a few labels for different classification tasks are available. Besides one- and few-shot learning, there are also zero-shot learning algorithms. Zero-shot learning (ZSL) is most often referred to as a fairly specific type of task: learn a classifier on one set of labels and then evaluate on a different set of labels that the classifier has never seen before. Recently, especially in NLP, it has been used much more broadly to make a model do something that it was not explicitly trained to do. In this paper, we present one of the state-of-the-art approaches for ZSL that is applied to intent classification tasks on the Weaver chatbot. The results obtained by this ZSL approach were compared to other supervised classification techniques based on BERT transformer frameworks. It can be observed that although the ZSL approach did not achieve satisfactory prediction performances, it can be used as a cold start algorithm for intents that are not available in the training dataset.

Keywords: Natural Language Processing, chatbot, zero-shot learning