

Minimizing Domain Bias When Adapting Sentiment Analysis Techniques to the Legal Domain

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DECLARATION

I, Gathika Ratnayaka, declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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ABSTRACT

Sentiment Analysis can be considered as an integral part of Natural Language Processing with a wide variety of significant use cases related to different application domains. Analyzing sentiments of descriptions that are given in Legal Opinion Texts has the potential to be applied in several legal information extraction tasks such as predicting the judgement of a legal case, predicting the winning party of a legal case, and identifying contradictory opinions and statements. However, the lack of annotated datasets for legal sentiment analysis imposes a major challenge when developing automatic approaches for legal sentiment analysis using supervised learning. In this work, we demonstrate an effective approach to develop reliable sentiment annotators for legal domain while utilizing a minimum number of resources. In that regard, we made use of domain adaptation techniques based on transfer learning, where a dataset from a high resource source domain is adapted to the target domain (legal opinion text domain). In this work, we have come up with a novel approach based on domain specific word representations to minimize the drawbacks that can be caused due to the differences in language semantics between the source and target domains when adapting a dataset from a source domain to a target domain. This novel approach is based on the observations that were derived using several word representational and language modelling techniques that were trained using legal domain specific corpora. In order to evaluate different word representational techniques in the legal domain, we have prepared a legal domain specific context based verb similarity dataset named *LeCoVe* . The experiments carried out within this research work demonstrate that our approach to develop sentiment annotators for legal domain in a low resource setting is successful with promising results and significant improvements over existing works.

Keywords: Sentiment Analysis; Deep Learning; Word Representation ; Semantic Analysis

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
ANN	Artificial Neural Networks
BERT	Bidirectional Encoder Representations from Transformers
CBOW	Continous Bag of Words
ELMO	Embeddings from Language Model
NLP	Natural Language Processing
POS	Part-Of-Speech
RNN	Recurrent Neural Network
RNTN	Recursive Neural Tensor Network
SG	Skip Gram

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