Department of Computer Science
St. Francis Xavier University

M.Sc. Thesis Proposal Presentation

Improving Explainability of Entity-Aware Financial Sentiment Classifiers

Presented by
Caelen Mattie

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Abstract: Sentiment analysis is a useful tool for information gathering and is utilized in many industries, including finance. A need for improved explainability in algorithms tasked with making high-stakes decisions has been spurred by regulatory requirements and the general desire for higher end-user understanding and trust. Traditional sentiment analysis techniques have a limitation in that they get confused easily when sentiment toward multiple entities is expressed in a span of text. Entity-aware sentiment analysis techniques learn to pick out these differences and provide targeted information related to the entity in question, a property with strong potential for industry use. This work seeks to better understand how modern explainability methods and language models can be used to generate explanations of these algorithmic decisions in a way that is comprehensible to non-experts. Attribution-guided counterfactual explanations show promise for more faithful and accessible natural language explanations. In my experiments, a FinBERT model is tuned for the task of predicting the sentiment of a particular entity in financial text. Feature importance techniques are used to guide the creation of a natural language explanation called a counterfactual. These explanations will be evaluated on metrics including validity, diversity, and plausibility. Current results show a need for targeted textual interventions in the explanation generation process as opposed to purely prompt based guidance.