



Advancements in Natural Language Processing: Enhancing Machine Understanding of Human Language in Conversational AI Systems

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ABSTRACT

This paper aims to review the recent developments in Natural Language Processing and their implications to the improvement of current comprehension in conversational AI interfaces. The comparison of four leading NLP models, namely BERT, GPT, T5 and XLNet is carried out systematically with respect to the major tasks of conversational interfaces including text generation, sentiment analysis and question answering. Based on the performance predicate that I used, it is clear that BERT has a 91% accuracy level. 5%, GPT 88. 2%, T5 89. 6%, and XLNet 90. 3%. Precision scores were precise to the second decimal place for BERT at 92. of reserves as 1%, while keeping GPT at 87%. 9%, T5 at 88. 5%, while last comes the averagely performing XLNet at 89. 7%. On the aspect of recall rates, BERT had a slightly better performance at 90.8%, GPT at 86. 5%, T5 at 87. ; 87% BERT, 88% RoBERTa, 89% XLNet. 2%. The recognized F1-scores were as well highest in BERT where it obtained 91. 4%, and XLNet at 89%. 5%, T5 at 88. Metcash Group Ltd at 17, Coles Group at 28, Woolworths at 10,