Paper Title: Medication Recommendation using Word Embedding and Recurrent Neural Network

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Abstract

Medication recommendation systems provide intelligent decision support by suggesting appropriate medications tailored to each patient's health profile and diagnosis. This reduces or eliminates the need to manually search drug databases when prescribing medications. In our study, we present an approach that involves word embedding to transform unstructured outpatient records into dense numerical vectors and a hierarchical recurrent neural network to make hierarchical predictions at four different levels of Anatomical Therapeutic Chemical (ATC) medication codes. Our algorithm was developed on 191,496 anonymized outpatient records. We compared the Word2Vec and FastText word embedding techniques. FastText emerged as a superior choice, possibly due to its ability to capture sub-word information. Our model achieved F1 scores of 0.7128, 0.6475, 0.3934, and 0.3156 at the 1st, 2nd, 3rd, and 4th ATC levels,
respectively. Our work offers a promising approach to extract meaningful medical information from unstructured medical records to optimise the drug recommendation process.