

Chemical Applications Of Pattern Recognition

A hybrid text mining system for chemical entity recognition and classification using dictionary look-up and pattern matching @ BeCalm challenge evaluation workshop

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Abstract. Chemicals as therapeutics and investigational agents receive much attention in clinical research and applications recently. However, automated approaches to recognize and categorize the chemical entities in biomedical text are challenging because of the wide varieties of morphologies and nomenclature. We present here a hybrid text mining system that combines chemical lexicon and patterns for recognition/categorization. We applied this approach to identify chemical entities from the patent abstracts of BioCreative V.5 Chemical Entity Mention Recognition (CEMP) corpus. We also compared the hybrid approach with the "traditional" lexicon-based method, and illustrated that the hybrid approach can achieve enhanced performance (i.e. precision, recall, and F-score) than the lexicon-based method.

Keywords. Chemical entity recognition; Chemical categorization; Text mining; Pattern matching; Chemical lexicon.

1 Introduction

The advances in data revolution reveal valuable information on the new roles of chemicals in disease treatment and adverse reaction. The effect of chemicals on the biological systems as therapeutic agents (i.e. drugs), investigational agents in drug discovery and unintentional agents to understand the adverse effects make them an important class of biomedical entities in clinical research and applications [1]. The scientific findings on chemicals are commonly available in published bi-

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