

Legal Judgment Prediction through Indictments via Data Visualization in Chinese

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Abstract : Legal Judgment Prediction (LJP) is a subtask for legal AI. Its main purpose is to use the facts of a case to predict the judgment result. In Taiwan's criminal procedure, when prosecutors complete the investigation of the case, they will decide whether to prosecute the suspect and which article of criminal law should be used based on the facts and evidence of the case. In this study, we collected 305,240 indictments from the public inquiry system of the procuratorate of the Ministry of Justice, which included 169 charges and 317 articles from 21 laws. We take the crime facts in the indictments as the main input to jointly learn the prediction model for law source, article, and charge simultaneously based on the pre-trained Bert model. For single article cases where the frequency of the charge and article are greater than 50, the prediction performance of law sources, articles, and charges reach 97.66, 92.22, and 60.52 macro-f1, respectively. To understand the big performance gap between articles and charges, we used a bipartite graph to visualize the relationship between the articles and charges, and found that the reason for the poor prediction performance was actually due to the wording precision. Some charges use the simplest words, while others may include the perpetrator or the result to make the charges more specific. For example, Article 284 of the Criminal Law may be indicted as "negligent injury", "negligent death", "business injury", "driving business injury", or "non-driving business injury". As another example, Article 10 of the Drug Hazard Control Regulations can be charged as "Drug Control Regulations" or "Drug Hazard Control Regulations". In order to solve the above problems and more accurately predict the article and charge, we plan to include the article content or charge names in the input, and use the sentence-pair classification method for question-answer problems in the BERT model to improve the performance. We will also consider a sequence-to-sequence approach to charge prediction.

Keywords : legal judgment prediction, deep learning, natural language processing, BERT, data visualization

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