Irish judgement recommendation using a knowledge graph

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University of Dublin, Trinity College, 2022

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Nowadays, one-third of the world's population lives in Common Law systems mixed with Civil Law, including Ireland. Common Law is characterised by repeated references to decisional precedents that eventually produce universal, agreed-upon laws. This research aims to apply the knowledge graph to the Ireland legal field to optimise the current case search experience of public platforms. According to the neural citation, a system that recommends highly relevant precedents combines knowledge extraction, knowledge integration and a recommendation algorithm to realise the vision. The project uses the official Irish service website courts.ie as the data source, collects and processes semi-structured and unstructured data through crawlers and natural language techniques, and enriches the data content with third-party databases to achieve ontology-based design for knowledge graph construction. MetaGraph2Vec performs graph embedding of the knowledge graph for use in downstream recommendation tasks. The Latent Dirichlet Allocation (LDA) model performs the topic modelling task to claim the labels required for MetaGraph2Vec training. The system is evaluated to achieve good recommendation results, with minor ontological defects, 72% macro-f1 scores and 48.15% system validity ($\gg$ probability of random recommendation: 5.29%). The contribution of the work can be concluded as follows: first, a small Irish Court Case Dataset about 'Justice'. Second, An ontology design and a knowledge graph compatible with the dataset. Third, a system that recommends relevant precedents/statutes. The whole Github repository can be found at `https://github.com/kongkongYuki/YuXin`, including video demonstrations of the system.