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The Inheritance Advisor: A Legal Expert System that Determines Estate Ownership

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Abstract

The Inheritance Advisor (IA) is an expert system (ES) designed to assist attorneys in determining the correct legal distribution of the estate of someone who has died "intestate", i.e., without will. IA guides the attorney through the process of gathering information about the family relationships of the deceased in an orderly and complete manner. From this information, IA determines the appropriate division of the estate. Using the system, the attorney is assured of obtaining all necessary information from the client in a single interview. IA is also a useful training tool, as the results allow an attorney to check their understanding of the division of an estate. Further, as the law evolves, IA can be updated to reflect any changes

Introduction

Legal reasoning requires the application of specific facts through a series of detailed reasoning steps to determine an appropriate course of action. Due to the number of sub-areas of law, each of which is addressed by numerous statutes that are frequently reinterpreted via decisions by state appellate courts (i.e., cases). Therefore, it is an overwhelming task for an attorney to remain thoroughly familiar with all of the statutes they may be called upon to render advice to a client. Even when working in a familiar sub-area of the law, the complexity of the reasoning process or the number of facts to consider can cause even a diligent attorney to draw an incorrect conclusion (Bench-Capon, 1990). Hence, legal reasoning is one domain where artificial intelligence applications can be of great benefit.

One area of law that most attorneys are called upon to interpret regards the distribution of an estate. When a person dies without will, the distribution of their estate is governed by the law of the state where the deceased resided. Because estate planning often fails to occur, attorneys are frequently confronted with the task of applying the law of estate distribution to ascertain which family members receive shares of the estate and in what proportion.

The process of determining intestate distribution in Oklahoma is based on a law that has been amended and reinterpreted since statehood. Attorneys who practice in this area must research and relearn the provisions of the statute with each relevant case and change in the law. Moreover, the statute is lengthy, complex, and difficult to apply for those with less than a day-to-day familiarity with its intricacies. In order to determine the appropriate distribution of the estate, the attorney needs information relevant to the structure of the deceased's family tree. Consequently, a major problem in applying the statute is gathering this information systematically and storing it in a useful manner. Another problem is the amount of time required to research and apply the provisions of the statute manually to the specific facts presented by the deceased's family tree to determine the correct distribution of an estate. Hence, the area of estate distribution is suitable for expert system (ES) development. Specifically, the payoff is relatively high since these questions are frequently addressed and domain experts who are familiar with the statute and its interpretation exist.

Knowledge Acquisition and Knowledge Representation

Legal reasoning readily lends itself to a rule-based knowledge representation (Bench-Capon & Coenen, 1996). As IA is intended to demonstrate 'proof of concept', a shell was deemed the easiest development approach. VP-Expert, a readily available commercial shell was selected. Therefore, IA uses backward chaining, depth-first search.

There is no uniform Federal Law of intestate distribution. Instead, the law of intestate distribution is specific to each state in the United States. Although the laws of each state are similar in application, there are specific differences that make each state a special case. Therefore, we selected a single state to demonstrate the feasibility of applying artificial intelligence techniques to this area of the law. To construct the ES, we obtained the current statute in Oklahoma that defines the rules for intestate distribution (Oklahoma Statutes, 1994). One member of the development team is a practicing attorney who interpreted the statute. The team worked through the statute line-by-line to develop the rules. For instance, "If the decedent [deceased] dies with surviving parents but without spouse or descendants, then the decedent's surviving parents inherit the estate in equal shares." This rule contains a conclusion of the distribution of ownership, i.e. equal shares to the deceased's surviving parents, and a premise consisting of three facts: (1) The deceased had surviving parents, (2) the deceased did not have a surviving spouse, and (3) the deceased did not have surviving descendants. Relevant cases were also consulted to develop the rules.

To test IA's accuracy, the attorney developed test cases based on the statute and his experience. As the final system was fairly small (22 rules), we were able to test all possible outcomes to ensure its completeness.

Using Inheritance Advisor

With access to the ES, the process of gathering the necessary information is organized and simplified. Using the Inheritance Advisor (IA), an attorney conducts an interview process to systematically gather the information. With IA guiding the interview, important factual issues are not overlooked, as may occur when an attorney must rely upon their memory of the statute. Because IA consistently applies the facts to the law represented in its knowledge base, the possibility of legal malpractice resulting from an erroneous application of the statute is reduced.

After obtaining the necessary information, AI provides a recommendation of the distribution of the estate and the basis for the recommendation. The interactive nature of IA, like most ES, allows the attorney to provide the client with immediate results, rather than having to terminate the client interview, research the provisions of the law and get back to the client with an answer.

Value of the Expert System

The IA has three obvious benefits: 1) assisting attorneys in understanding the current statute; 2) training attorneys; 3) providing an easily used record of older versions of the statute.

In the first case, IA assists attorneys advising clients regarding the probable distribution of an estate. As described, IA guides the attorney through the fact gathering process, stores the information, and uses it to determine the appropriate estate distribution. By bringing a consistent pattern of structure and organization to the process of fact gathering and analysis, IA reduces the possibility of legal malpractice that may result from unjustified assumptions about the facts, misconceptions about the law, and errors of logical analysis. However, IA is not designed as a substitute for an attorney. Specifically, IA's interface presumes that the user understands the legal definitions of terms such as 'spouse,' 'parent,' etc. These terms seem simple, but they possess specific legal definitions, each of which would require similar sized KBS to thoroughly examine. Hence, IA is intended to optimize the symbiotic relationship between human intelligence and artificial intelligence. The insightful and intuitive analysis provided by human intelligence is structured, organized and recorded by artificial intelligence providing the best of both realms and giving additional confidence in the estate distribution process.

Used as a training tool, IA and the trainee are presented with hypothetical situations. By comparing their results with those generated by the IA, the trainee can determine if their recommendation is consistent with the law. In the case of a mismatch, the trainee can examine the IA rule chain to determine what was overlooked and how to correct their reasoning process. Individuals studying for the bar exam are likely to benefit from this use of the system. Practicing attorneys could take advantage of this feature when the statute is revised.

Finally, recording older versions of the statute may be the most valuable benefit. In some situations, older versions of the statute must be referenced to determine estate distribution. Correct distribution is determined by the version of the statute in force at the time of death. To understand this benefit, suppose that an individual inherited from a grandparent in 1980 but no probate was filed as the estate did not have much value. Subsequently, suppose that oil or gas was discovered on part of the grandparent's former estate. If the grandchild (who inherited under an earlier version of the statute) dies, their estate is divided under the new statute, but first (since probate was not filed), it may be necessary to determine if their grandparent's estate was correctly divided. The older version of the statute, in force in 1980, must be referenced. In these circumstances, attorneys must spend considerable time researching the older statute. However, it is a simple matter to retain older versions of IA when it is updated. Then, attorneys could call upon the appropriate version rather than manually research the older statute.

Future Plans for the System

Currently, IA assists attorneys when no estate planning has occurred. IA could be enhanced to provide assistance in estate planning so that unintended consequences do not occur. Using artificial intelligence techniques, an expanded system could devise an estate plan that distributes assets as the client intends. The system could then generate a comparison showing how estate planning avoids the potentially unintended results and consequences of inadequate or non-existent estate plans.

Additionally, we intend to make the system available through the Internet. As the law changes and is reinterpreted by the court system, the KB must be updated. The timely distribution of software updates is often a significant problem in legal

applications as the basis for the statutes and cases are not static. Maintaining IA in a single site makes the distribution of periodic software updates unnecessary, eliminating the possibility of obtaining incorrect results from the unintended use of an outdated KB.

Conclusion

The use of artificial intelligence techniques in legal analysis is in its formative stages (Bench-Capon and Coenen, 1996). IA demonstrates the use of ES techniques within the domain of intestate estate distribution. It assists attorneys in organizing the information, streamlines the process of reaching a reliable result, and provides a starting point for further use of artificial intelligence techniques in the estate planning process.

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