具智財法解析能力之智慧型商標訴訟判決書分析

A trademark infringement case analysis and legal precedence recommendation system using machine learning approaches

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Abstract

Intellectual property (IP) legal case precedents have a considerable impact on the development of litigation strategies. This research presented an intelligent trademark (TM) litigation judgments recommendation system. The neural network language modeling (NNLM) for judgement semantic analysis is developed to identify similar TM legal precedents for any given TM dispute cases. More than 4,800 TM judgment documents are used as the NNLM training set. In this research, the words in TM legal documents are vectorized to train the NN model for e-discovery of semantically correlated precedents and their features. The goal of this research is to provide recommended judgments automatically and accurately with matching TM case law characteristics. The outputs of the system will be the auxiliary materials for TM legal offenses and defenses. This research first completes the construction of the ontology of TM legal papers, which serves as the basis for textual exploration of the infringement cases. Thus, the key terms in legal judgment text, after word embedding, will serve as the basis for discovering and recommending high-relevance judgments, through clustering similar judgments and identifying main topics, features/characteristics, and related laws in the judgements. IP legal departments or legal councils can rapidly pin prior similar judgments with critical characteristics and specific laws when preparing legal actions. While conducting this research, we have discovered that TM case laws often show overlaps with other laws, e.g., copyrights, patent, contract laws, which demonstrate the potential extensions of this research to other legal fields, especially in general IP legal tech (which often dealing huge numbers of domain-specific documents and contents). This research has demonstrated the great opportunities in researching “legal tech” (or called eLegal), applying AI, machine/deep learning, and other advanced information technologies. Prof. Amy Trappey (PI) has been invited to be the Associate Editor of *World Patent Information*, the flagship journal in IP informatic research. The research has published two journal papers and has one paper in the final review/revision process.

References

[1] Trappey, C.V., Trappey, A.J.C.*, Liu, B.-H., 2020, “Identify trademark legal case precedents - Using machine learning to enable semantic analysis of judgments,” World Patent Information, Vol. 62, https://doi.org/10.1016/j.wpi.2020.101980 (Online published September 2020).

[2] Trappey, C.V., Chang, A.C.*, Trappey, A.J.C., 2021, “Building an internet based knowledge ontology for trademark protection,” Journal of Global Information Management (JGIM), Vol 29, No. 1, pp 123-144 (SSCI).

[3] Li, J.G.K., Trappey, C.V., Trappey, A.J.C., Li, A.A.S., 2021, “ Ontology-based knowledge representation and semantic topic modeling for intelligent trademark legal precedents research,” World Patent Information (R1 under review).

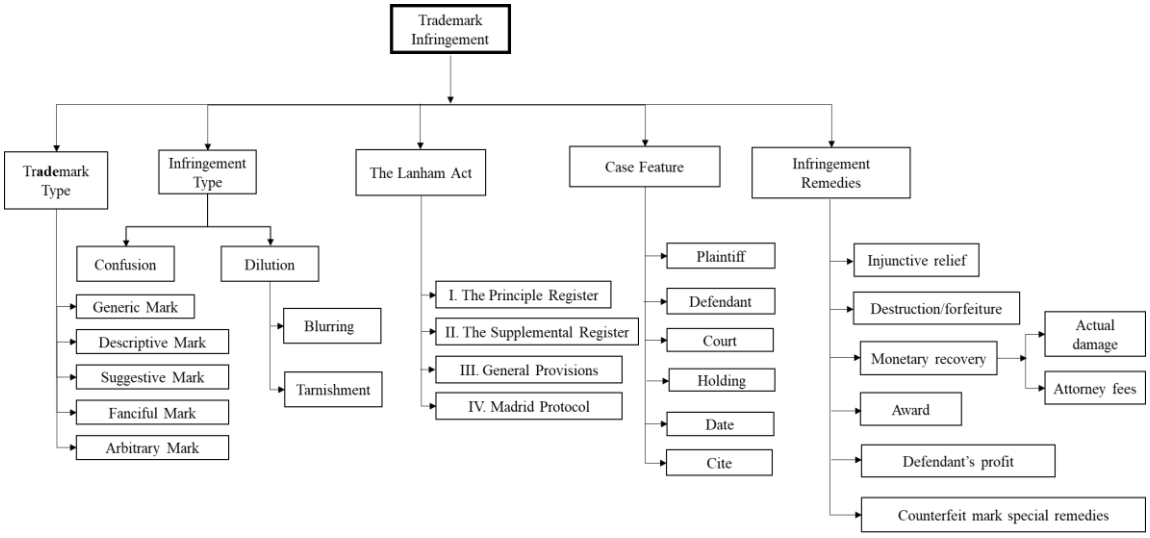

Fig. 1. Ontology schema represents knowledge hierarchy of TM case laws.

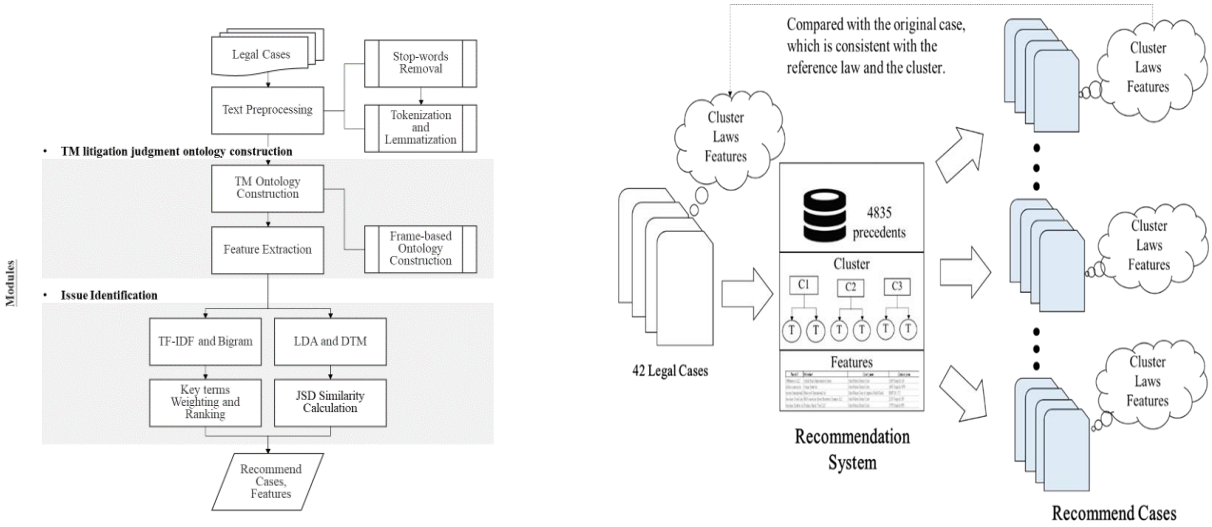

Fig. 2. The research process flow and the case clustering analysis module.

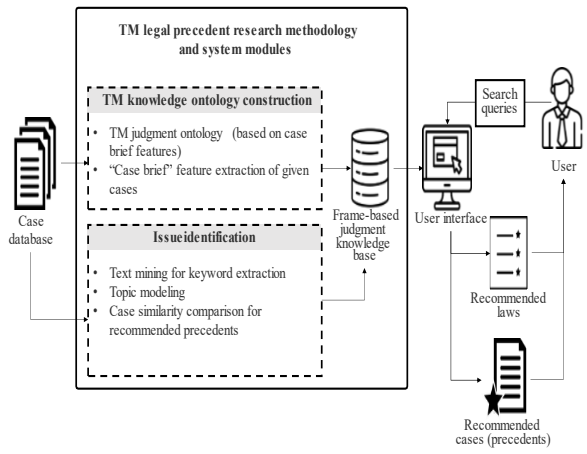

Figure 3. TM judgment recommendation system

Case title	Starbucks Corp v Wolfe's Borough Coffee Inc	Phillip Morris USA Inc v Shalabi	AVELA Inc v Estate of Marilyn Monroe LLC
Citation number	477 F.3d 765	352 F.Supp.2d 1067	131 F.Supp.3d 196
Mark	Word	Word	Word
Dominant topics	Topics 6, 1	Topics 6, 5	Topic 3
Relevant issues (in common)	• Trademark Infringement • Trademark Dilution • Unfair Competition • Injunction	• Trademark Infringement • Likelihood of Confusion • Registration • Trademark Dilution • False designations of origin • Unfair Competition • Injunction • Recovery	• Trademark Infringement • Likelihood of Confusion • Registration • Trademark Dilution • Unfair Competition • False advertising/ endorsement/ association
Applied rules (law)	15 U.S.C. § 1125(c) 15 U.S.C. § 1127	15 U.S.C. § 1125(a) 15 U.S.C. § 1114(1) 15 U.S.C. § 1114 15 U.S.C. § 1116(a)	15 U.S.C. § 1125(a) 15 U.S.C. § 1125(c) 15 U.S.C. § 1114
Holdings	Remanded	Granted	Granted in part Denied in part

Fig. 4. The sample recommended cases.