

JURISIN 9

Ninth International Workshop on Juris-Informatics (JURISIN 2015)

Ken Satoh¹, and Takehiko Kasahara²

¹ National Institute of Informatics and Sokendai, Tokyo, Japan

² Toin University of Yokohama, Yokohama, Japan

Juris-informatics is a new research area which studies legal issues from the perspective of informatics. The purpose of this workshop is to discuss both the fundamental and practical issues among people from the various backgrounds such as law, social science, information and intelligent technology, logic and philosophy, including the conventional “AI and law” area. The Ninth International Workshop on Juris-Informatics (JURISIN 2015) was held on November 17 and 18, 2015, in association with the Seventh JSAI International Symposia on AI (JSAI-isAI 2015) with a support of the Japanese Society for Artificial Intelligence (JSAI).

This year, we have twenty one submissions and each paper was reviewed by at least three program committee members and as a result, nineteen papers was presented at the workshop.

Papers cover logical inference, ontology, natural language processing, information retrieval, and so on. As invited speakers, we have Giovanni Sartor from University of Bologna, Italy, Shiro Kawashima from Doshisha University, Japan, Do Kwan Jo from National Assembly Law Library, Korea and Miyoung Jin Kim, from Justice Law Firm, Korea. Moreover, Phan Minh Dung from AIT, Thailand, gave a joint-invited talk on his current research on an argumentation framework based on the strength of inference rules in cooperation with the 2nd International Workshop on Argument for Agreement and Assurance (AAA 2015).

Following the event started at JURISIN 2014, we held the second competition on legal information extraction/entailment (COLIEE-2015) on a legal data collection. The COLIEE competition is about performance on a legal question answering task; we structure the competition into three subtasks of retrieval, information extraction, and entailment.

Overall, the competition focuses on legal information processing related to answering yes/no questions from Japanese legal bar exams (the relevant data sets have been translated from Japanese to English):

- Phase 1 of the legal question answering task is to extract relevant civil codes given a legal bar exam question.
- Phase 2 of the legal question answering task is to decide whether relevant civil codes entail a legal bar exam question.
- Phase 3 task is combination of Phase 1 and Phase 2.

A variety of methods were used by competitors. For Phase 1, for example, ranking SVM, TFxIDF, n-gram features from the query and articles using lexical and

morphological characteristics and their own relevance score are used. Furthermore, some extended information retrieval techniques have been used, e.g., Hiemstra, BM25 and PL2F, keyword weighting method and snippet scoring, and Hidden Markov Model. For Phase 2, the participants used AdaBoost with their own selected features, a convolutional neural network (CNN), and heuristic thresholds on snippet scores. Most of the systems do not depend on deep linguistic features, which require domain knowledge, but instead propose heuristic feature weighting and scoring methods.

After the workshop, fifteen papers were submitted for the post proceedings. They were reviewed by PC members again and eight papers were finally selected. Contributions of these papers are as follows. Gavanelli et al. extended their work on abductive logic programming with constraint processing to process normative reasoning and ontological query answering. Arisaka proposed a belief revision framework to adapt new legal scenarios conflicting with the current legal statutes. Robaldo et al. formalized real-world obligations by combining normative reasoning called “input/output logic” and natural language semantics called “reification-based approach”. Bartolini et al. provided a bottom-up ontology describing the constituents of data protection domain and its relationships which is an urgent issue in European data protection policy. Sakamoto et al. enhanced a machine translation method using multi-word expressions which frequently appear in legal texts. Nishina et al. proposed an evaluation method of the acceptability of arguments called “reliability-based argumentation framework” and developed a tool for calculating acceptability of arguments. Kim et al. proposed solutions of COLIEE competition using a deep convolutional neural network for textual entailment which is the first to adapt deep learning for the task. Carvalho et al. also proposed solutions of the competition using combination of n-gram model for the civil code extraction and distributional semantic similarity for the textual entailment.

Finally, we wish to express our gratitude to all those who submitted papers, PC members, discussant and attentive audience.

JURISIN 2015 Workshop Co-chairs
Ken Satoh
Takehiko Kasahara