

## 編者的話

本期學報（24 卷 3 期）共收錄了四篇論文，各篇的主題簡述如下：

謝佩璇、張珽婷之「虛擬社群知識分享互動模式之研究—以 3D 動畫設計軟體論壇為例」：在虛擬社群中，成員的互動關係如同人際社會網絡，每位成員在社會網絡中都有其所處的位置，而所處的位置又會而影響取得知識資源的能力。該研究採用社會網絡分析法（Social Network Analysis; SNA）探討論壇網絡結構與知識分享的關係，以進一步探討社群成員互動模式（Interaction Pattern）隱含的商業價值。研究結果顯示，論壇成員互動模式可依接近中心性分為「溝通型」、「接收型」、「付出型」及「冷漠型」四種類型，其中大多網絡成員屬於「溝通型」。該研究也發現網絡中成員的程度中心性普遍偏低，僅有少數人擁有較高的程度中心性，此顯示網絡結構中成員的互動程度普遍差不多，但中間存在一群密切和大家互動的專家成員，研究最後提出學術貢獻與管理意涵。

葉慶隆、林國中、蔡慧貞、莊茵婷之「以知識工程方法設計與實現語意網架構之電子病歷交換服務」：衛生署在 2009 年推動醫療影像報告、血液檢驗報告、門診用藥紀錄及出院病摘等 4 項之電子病歷交換標準，其方法為將分散儲存於各醫院之病歷資料，建置交換中心（EEC）提供跨院區索引集中查詢。但因民眾大都選擇當下方便的且即時的醫院就醫，導致每位病患之病歷項目繁多，醫師在透過健保卡尋找院外電子病歷時，往往出現很多的歷史病歷清單，醫師又得花費許多時間在調閱資料上，才能找到符合自己需求的病歷資料；也因此降低了門診醫師使用 EEC 平台的意願。該研究旨在設計推薦調閱系統來解決現行醫師在 EEC 平台上調閱所需病歷不易問題。首先，使用 CommonKADS 知識工程方法論來找到醫師在問診時的領域知識，並進而設計專屬之問診知識集，作為發展電子病歷交換推薦調閱介面的設計基礎。其次，設計推薦電子病歷交換平台之有效管理系統，來承載大量資料。再來，發展推薦調閱規則之 SPAQRL 語言，針對運用現行存在 EEC 平台下載之電子病歷 XML 檔案，擴大應用各醫院間已簽章之電子病歷資料；最後，運用 RDF 相關技術來承載 SPAQRL 查詢語言，進而提升 EEC 平台查詢調閱之效率與精確度。

朱彩馨、邱于慈之「同舟共濟：多重學域合作中社會互賴關係對知識疆界跨越之影響」：當組織組成跨領域團隊並期望藉助多重學域的知識來提供顧客更好的服務時，人們必需留意由於成員各自相異的專業知識而形成的合作障礙。知識就

像是個雙面刀；它雖然可能促成創新的解法，但也由於知識具備高度的內隱與情境黏著性，它也可能使得跨領域的知識創造失靈。在此，即使團隊成員使用同一個術語，但由於各個專業領域所內嵌的假設、詮釋與價值觀各異，使得成員們可能對此術語產生不一致的解釋與關注重點，進而產生許多誤解與衝突。此種因為知識而產生的合作障礙，即為知識疆界問題。

該研究探討在多重學域合作的情境中，團隊成員所感知的社會互賴關係（social interdependences）如何影響知識疆界的跨越。社會互賴關係提供成員橋接知識疆界的動機，好讓彼此能達成各自的目標、完成自己的工作、並獲得獎賞。以數位學習內容開發專案（其本質上需要不同專業領域的成員合作）為例，該研究調查社會互賴關係如何促進有效的知識疆界跨越並進而提高專案績效。以專案為資料分析的基礎，該研究收集了 70 組資料，每一組資料皆由二位具有不同專業背景的成員填寫。運用 Partial Least Squares (PLS) 分析，他們發現有效的知識疆界跨越可以提昇專案產出與過程的品質。而在社會互賴關係中，當成員們感知到目標與任務的互賴將可促成知識疆界跨越，但感知獎賞互賴則無此效應。他們於文後也討論此研究發現對學術與實務可能帶來的意涵。

李彥賢、賴家玄、蔡佳玲之「以健保資料庫建構頭頸癌併發吸入性肺炎高風險病患之預測模式」：預防醫學是指以預防疾病的發生，來代替對疾病的治療，其主要目標在於健康的促進以及疾病的預防，藉由讓民眾增加對疾病的認知、改變態度，用預防的概念來管理健康。近年來隨著人口結構與疾病型態的轉變，使得預防醫學逐漸受到重視。根據台灣衛福部 2014 年統計，頭頸癌死亡率在所有癌症中排名第五。頭頸癌的治療方式根據病人狀況通常包含手術、放射治療及化學治療，然而相關治療的後遺症或腫瘤位置的因素，往往引起患者吞嚥的問題而導致噎咳，嚴重者更會併發吸入性肺炎。根據研究，頭頸癌若併發吸入性肺炎，在 12 個月內的死亡率將近 10%。過去研究雖指出頭頸癌併發吸入性之可能影響因素，但各研究間觀察的變數不同，且研究結果略有差異，而實務上亦仍未建立評估準則可供醫師評估病患。該研究期望能基於健保申報資料，利用資料探勘中分類學習技術，試圖建構預測模式來協助預測頭頸癌併發吸入性肺炎之高風險病患，以期能給予病患適當之衛生教育，預防吸入性肺炎或及早發現相關症狀，以降低患者的死亡風險及相關醫療成本。實驗評估結果顯示，用以建立訓練資料的抽樣方式明顯影響分類器效能，而從整體學習方法的預測效能來看，Boosting 方法在一般資料情況下預測效能優於 Bagging 方法；而 Bagging 方法效能差異，取決於採

用的基礎學習演算法，其中以 Decision Tree 方法最佳。儘管如此，該研究評估之五種演算法皆達成相當不錯之預測效能，而以 RBF-Kernel SVM 為基礎學習演算法之 Bagging 方法更是對訓練資料外的非目標類別資料（未併發吸入性肺炎之頭頸癌病患），有相當好的預測效能。

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# Editor's Introduction

In this issue of *Journal of Information Management*, we are delighted to present four research papers. The summaries of these papers are as follows.

Pei-Hsuan Hsieh and Chueh-Ting Chang in their paper "A Study of Interaction Patterns of Virtual Communities for Knowledge Sharing in 3D Animation Design Forums" aim to help social network managers know more about their members and interaction patterns, and provides them design direction to apply marketing and motivational strategies when re-designing knowledge-sharing forums. In a virtual community, the interactions among members help form an interpersonal social network. Each member has a location in the social network, and that will affect their ability to acquire knowledge resources. The study aims to investigate the relationship between network structure and knowledge sharing, and further explores the commercial value implied in the interaction patterns of the members. The study uses social network analysis (SNA) to examine member interaction patterns for six months during the most active participation period in four forums, CGSOCIETY, 3DM3.com, CGHUB, and 3D Buzz. For each forum, further examinations are carried out of its six 3D animated design software discussion rooms, i.e., those for 3ds max, Maya, Cinema 4D, ZBrush, Lightwave, and Softimage. The study's results show that forums members' interaction patterns of knowledge sharing can be divided into four types based on closeness centrality: interactive type, collecting type, contributing type, and isolated type. Among these the interactive type is the most common, with about half the network members showing the interaction pattern. Moreover, the study also finds that most network members have low degree centralities, with only a small number having high ones. From the perspective of knowledge market theory, the contributing type of forum members have the highest market value with regard to knowledge sharing. Since the interactive type of interactions are most common among forum members, marketing campaigns to encourage more effective knowledge sharing should aim at these users and these behaviors. In addition, from the perspective of motivation theory, the collecting type of forum members have the greatest potential for being inspired to share knowledge with

others. Future studies are recommended to observe forum members' interactive patterns for longer than six months, and other types of discussion rooms and forums should also be examined so that comparisons can be made. Forum members' interactions are generally similar, but there are a few expert members who frequently interact with others in the network structure make the most contributions to sustain the operation of the forums. Varied reward and evaluation mechanisms are suggested to be developed for encouraging more active participation of forum members.

Ching-Long Yeh, Kuo-Chung Lin, Hui-Chen Tsai and Yin-Ting Chuang in their paper "Knowledge Engineering Approach to Design and Implementation of Semantic Web Architecture for EMR Exchange Services" aims to design systems to solve the current recommended access to physicians in the EEC internet access to needed medical difficult problem. Their study will be converted into electronic medical records XML file RDF Schema agent, not only can effectively address the plight of the operation of the existing EEC, but can be expanded to extend the application of electronic medical records, the development of an effective system of electronic medical records can be recommended to improve doctor-patient relationship. The study used CommonKADS knowledge-engineering methodology to locate the domain of the physician in diagnosed enquiry, and then, design an exclusive enquiring science anthology as a basis of accessing interface to develop, exchange, and recommend the EMR. Secondary, design and recommend an effective managing system of the EMR exchanging platform to carry bulk data, and then, develop and recommend the SPARQL language of the accessing rules, aiming at the existing EEC platform to download the XML file of EMR, so as to broaden the inter-hospital application of the signed EMR. Finally, use RDF-related technology to carry SPARQL-enquiring language, and further to enhance the enquiring and accessing efficiency and precision of the EEC platform. In the study, introducing EHR interoperability through empirical findings, the use of XML files generated by the application in practice to expand the extension of applications, not only can improve the exchange of electronic medical records when physicians willingness to see the doctor, and can increase the accuracy of access to medical records and timeliness, access to external medical physicians no longer need to wait for a long time, saving time outpatient medical records transfer, the more time spent on interrogation, and thus enhance the doctor-patient relationship, but also provides a platform to use existing EEC

some sort of relief program on the predicament faced. In the study, access to electronic medical records exchange, Taiwan is currently only implemented EHR environment as an object, and only in line with national health care system, whether or not covered by a health or social limits of national health care systems of the advanced countries of the study; others present Research is currently only physicians access to electronic medical records at the clinic recommended as a reference design that is appropriate for the problem of other medical specialties, is another limitation of the study. Conclusions from the study seen by the results of the study may expand Taiwan's electronic medical records exchange file existing range of applications; future studies will, through a wider range of medical experts in the field of knowledge development, and a combination of these faces with rich semantics of RDF files of Cloud Applications, Taiwan will forward the information to the electronic medical record massive cloud computing, and to develop national health policy, community disease prevention, medication safety and other fields.

Tsai-Hsin Chu and Yu-Tzu Chiu in their paper "We Are in the Same Boat: The Effect of Social Interdependences on Knowledge Boundary Spanning in Interdisciplinary Collaboration" states that their findings highlight knowledge boundary issue in a collaboration evolved with members who have different professions. their finding contributes service science and knowledge management research by making aware of the impact of knowledge boundary spanning, as well as by suggesting a way for managing knowledge boundary spanning proactively. As organizations emphasize cross-functional team to leverage knowledge across disciplines for providing better services to customers, it is important to note the challenge due to knowledge boundaries within the collaboration among members who are trained by different disciplines. Knowledge is like a double-edged knife that can drive innovative solutions as well can hinder knowledge creation across functions because of its tacit and stickiness nature. The different assumptions, interpretations, and value schemes embedded in individual discipline make the team members have inconsistent interpretations and interests even when they use common terminologies. The raising misunderstandings and conflicts highlight an important issue called knowledge boundary problem. Their study investigates knowledge boundary spanning by perceived goal, task and reward social interdependences under the interdisciplinary collaborative context where members have

different professional backgrounds. Taking e-learning content development that engages different professions as an example, the study conducted a survey to empirically examine how social interdependences facilitate the effectiveness of knowledge boundary spanning, and subsequently influenced the project performance. In a project level, they collected totally 70 pair of data, each of which was represented by the answers of two team members with different professional backgrounds. Applying the Partial Least Squares (PLS) analysis, their findings highlighted that effective knowledge boundary spanning could predict product and process qualities. The findings also showed that perceived goal and task interdependences had significant and positive impacts on the effectiveness of knowledge boundary spanning, but perceived reward interdependence did not. The study contributes current research by demonstrating the importance of knowledge boundary spanning for making a successful interdisciplinary collaboration. The study also extends previous research findings by showing the way where effective knowledge boundary spanning can be proactively managed through social interdependences perceived by team members who have different professions. To practice, their findings provide a solution to manage knowledge boundary problems that might rise problems and conflicts across professions. For effectively applying the tacit, sticky and localized practical knowledge constructed by members from other discipline, team members have to extensively concentrate on the effectiveness of lexicons transfer, interpretations translation, and interests transformation. When working on an interdisciplinary collaboration project, managers can increase the perceived goal interdependence by designing a share goal which can be accomplished when the subgroups pressure their individual goals. And, manager can make the task intertwined to increase the perceived task interdependence.

Yen-Hsien Lee, Chia-Hsuan Lai and Jia-Ling Cai in their paper “A Prediction Model for Head and Neck Cancer Patient Complicated with Aspiration Pneumonia” investigated the factors that may cause the complication of aspiration pneumonia, thereby constructing a prediction model based on the health insurance database to predict the head and neck cancer patients who are at risk. They developed a method for database preprocessing, training dataset creation, and prediction model construction. The evaluation results suggested practicability and effectiveness of the proposed method. The treatment-related adverse effects of head and neck cancer and/or the anatomic location of tumors are likely to cause swallowing problems that might lead to the complications such

as choking, malnutrition, and aspiration pneumonia. Prior research indicated the 12-month death rate of head and neck cancer patient with the complication of aspiration pneumonia is nearly 10%. The factors that cause the complication of aspiration pneumonia have been observed in prior studies but inconclusive. Their study aims to discover Taiwan's National Health Insurance Research Database, the most comprehensive records of medical insurance claim in Taiwan, to construct a prediction model for the head and neck cancer patients who are at risk of aspiration pneumonia. They reviewed the literature to identify a collective set of thirteen factors, which are relevant to the head and neck cancer patients with the complication of aspiration pneumonia and whose data values are available in Taiwan's National Health Insurance Research Database, and adopted them as independent variables. They used propensity score matching to create training dataset and implemented bagging-based and boosting-based ensemble learning methods with different learning algorithms to construct prediction models. The results suggested that the five investigated approaches were effective in predicting the head and neck cancer patients at risk of aspiration pneumonia. The prediction performances achieved by boosting-based ensemble learning methods were better than bagging-based ones. Overall, the proposed approach can be promising to the construction of prediction model for the head and neck cancer patients with higher risk of aspiration pneumonia using Taiwan's National Health Insurance Research Database. The study applies ensemble learning to construct the prediction model for predicting the head and neck cancer patients at risk of aspiration pneumonia. The evaluation results reveal the effectiveness and the practicability of the proposed method, which builds the prediction model based on health insurance database. The study has contributed to the research area of health data mining. Nevertheless, the independent variables used to construct the prediction model are limited to the records of medical insurance claim. Future research is suggested to incorporate other data sets, such as medical records into the construction of prediction models. The proposed method can be developed into a decision support system to support physicians in assessing the head and neck cancer patients who are at risk of aspiration pneumonia. Such patients can be well educated in advance to prevent the occurrence of aspiration pneumonia. The development of such system is feasible because the records of the medical insurance claim required for constructing the prediction model are ready available.

Finally, on behalf of the editorial team, I would like to thank all the authors and reviewers for their collaborative efforts to make this issue possible. It is our sincere wish that this journal become abilingual knowledge exchange platform among information systems researchers around the world.

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