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• 計畫英文名稱	Building a Probabilistic Dermatopathological Diagnostic Decision Support System		
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• 研究人員	李友專 Li, Yu-Chuan		
• 中文關鍵字	皮膚病理學；醫學知識庫；決策支援系統；機率性推論；知識工程		
• 英文關鍵字	Dermatopathology；Medical knowledge base；Decision support system；Probabilistic inference；Knowledge engineering		
• 中文摘要	本計畫將以三年的時間建立一機率性皮膚病理診斷決策支援系統(Probabilistic dermatopathological diagnostic decision support system)。研究人員將從知識表現法(Knowledge representation)之研究開始,尋求及開發最適合本系統之機率性知識表現法;接著利用最新之電腦網路技術建制活動式知識工程會議室(Mobile knowledge engineering conference room)以發展知識工程程序,並建造本系統所需之皮膚病理知識庫(Knowledge base);再加上自行開發之推論引擎(Inference engine)及使用者介面(User interface),而完成此皮膚病理診斷決策支援系統。最後並將有一系列完整的 System Evaluation,以了解此系統在醫學診斷上的表現,並做作為進一步修正其知識庫的參考。 預計此系統完成後將能接受二千種以上之皮膚病理發現(Findings)的輸入,並分辨五百種以上之皮膚病理學診斷。其將為國內最大型的知識庫之一。 本研究首先將機率性推論應用於皮膚病理之診斷支援系統,一方面可將 Probabilistic decision support 在醫學應用之研究在國內紮根,另一方面完成後之系統可供國內之醫學生及皮膚科醫師作為教學及臨床服務之用。 參與本計畫之工作人員,將可獲得對 Probabilistic KR 更深入之了解,實際參與 KE 之過程,並接觸到 KB 之建立、推論引擎之機制研究等。最後更可以參與完整的 Expert system evaluation 的研究;對如何從零開始建立診斷決策支援系統將有全面性的訓練。		
• 英文摘要	The purpose of this three-year project is to build a probabilistic decision support system that will aid in dermatopathological diagnosis. We will start from proposing a probabilistic knowledge representation that can suffice the need of representing the intricacy of dermatopathological knowledge. By using state-of-the-art knowledge engineering technique and equipment, the knowledge base will be built with the help of several dermatopathology experts (our co-investigator and associate researchers). We will also develop the inference engine and user interface for this		

system. Once all the parts of the system are put together, it will undergo a vigorous evaluation process. Both theoretical performance indices (including accuracy, reliability and discriminating power) and clinical performance are to be tested. The system will also be evaluated against a group of physicians in terms of diagnostic accuracy. The resultant system will be a knowledge-based decision support system that can accept more than 2000 different dermatopathological findings as input. Based on these findings, this system can discriminate more than 1000 different dermatopathological diagnosis. The scale of the knowledge base may be one of the largest ever built in this country. Based on our review of literatures, this project may be the first to propose applying probabilistic reasoning to dermatopathological diagnosis. By completing this project, we will not only make a significant step toward research on application of probabilistic reasoning in medical field, but also provide a system that may help in medical education and clinical services.