User-Centred and Driven Knowledge-Based Systems for Clinical Support using Ripple Down Rules

Debbie Richards
Department of Computing
Division of Information and Communications Sciences
Macquarie University
Sydney, Australia
Email: richards@ics.mq.edu.au

Ripple Down Rules (RDR) are a case-based reasoning technique that have been developed in answer to the need to provide a way of maintaining large KBS in domains where knowledge and practice are continually being reviewed. RDR are based on the view that knowledge is not an artifact but something that is "made-up" to fit a particular situation. In keeping with this, maintenance and context are key issues. RDR offer a number of features that make it particularly suitable for clinical support. These features are: knowledge is captured, changed and validated within the local context of cases; KA is simple and designed to be performed by the domain expert; and the use of cases, difference lists and the exception structure are intuitive and natural for experts.

In medical domains, ownership and control of knowledge are seen as important issues and the ability to build a KBS without the need for a knowledge engineer is a real plus. The ease of developing and maintaining an RDR KBS means that it is feasible for individual pathology laboratories to customise the system to suit the local knowledge which they contain. This paper describes RDR, how they provide an environment for interacting with the knowledge according to the decision situation of the user and some results-to-date in the area of pathology.