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Expert cardiology support over the internet

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Cardiovascular disease is one of the biggest killers in our society and is one of the most serious problems presenting in clinical practice. Immediate treatment decisions are based on the availability of resources and the accuracy of ECG interpretation. Scarcity of expert cardiology knowledge and lack of resource availability are two major problems faced by the developing countries. This paper presents a system, which utilizes Internet technologies and expert system technologies to make available expert cardiology knowledge and lack of resource availability are two major problems faced by the developing countries. This paper presents a system, which utilizes Internet technologies and expert system technologies to make available expert cardiology knowledge to a wider audience. System functionality is broadly divided in to two main categories, expert diagnosis and cardiovascular survey. A thorough study of the cardiology domain was carried out to understand and logically sequence the diagnostic procedures. All relevant research findings were represented using a rule-based knowledge representation formalism. Diagnosis process starts by prompting the user with a dynamic set fo questions. The nature and the sequence of these questions vary depending on the condition of the patient. Final diagnosis results depend on the symptoms gathered and the interpretations given by the system for user attached ECG scripts.

Second mode of operation is to provide cardiovascular surveying facilities using the well-known Minnesota code system. In this mode, users are given the option to send a batch of ECG scripts. These ECG scripts are processed to extract significant wave patterns. Depending on these patterns the ECGs are coded into Minnesota code and grounped in to several distinct groups. Apart from the above two main functions, system also provides facilities to maintain patient history records. It also caters for providing telemedicine facilities by having a group of expert cardiologists registered with the system. This provides an extra guarantee and confirmation to the diagnostic results. System was tested and evaluated by a group of domain experts. Availability and ease of access were considered some of the major benefits. Epidemiologists view the system as a very effective and an accurate tool in carrying out cardiovascular

surveys and population studies. Minnesota codes generated by the system were evaluated against the codes given by domain experts for the same set for ECGs. The results were almost identical and it is expected to test the system further with 400 manually coded ECG scripts. Overall functionality was accepted by domain experts as an efficient and a cost effective way of deploying expert cardiology knowledge to a wider audience.