LIVESTOCK DIAGNOSTIC SUPPORT SYSTEM FOR RURAL PASTORALIST COMMUNITIES IN KENYA: A PROTOTYPE

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REG. NO: P56/72004/2008

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JULY 2011

Project report submitted in partial fulfillment of the requirements governing the award of the Degree of Masters of Science in Information Systems
Declaration

I declare that this research project is my original work and has not been presented for any other university award.

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This research project has been submitted as part fulfillment of the requirements for the Master of Science in Information Systems of the University of Nairobi with my approval as the University supervisor.

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Abstract

The goal of this project was to develop a functional livestock diagnostic prototype to be used by pastoralist communities in arid and semi-arid lands of Kenya. The prototype will be used by non-experts in the veterinary domain to address pastoralist livestock health needs. The prototype has been implemented using artificial neural network that learns on existing and emerging livestock diseases. Learning involves training the network via a graphical user interface provided by the system. Our neural network uses supervised learning, where a set of input and output values (i.e. symptoms and diseases) are supplied to the network.

Once the network has been trained, the system prompts the user with probable hypothesis regarding the livestock disease symptoms. The user in turn confirms or denies the hypothesis through a web-based graphical interface. Finally, the system diagnoses the disease that the livestock is suffering from and provides appropriate medical recommendations.

For the system to associate a certain disease with specific symptoms, the symptoms were set to meet a threshold of at least 59%. On average, the threshold level ranging above or equal to 59% presented to the system during the testing process was 79.59%. The system associated the symptoms with their respective diseases with 69.64% accuracy. On the other hand, the threshold level ranging below 59% presented to the system during the testing process was 38.75% on average. In each case, the system could not associate the symptoms with any disease. During evaluation process, majority of the pastoralists and the veterinarians were satisfied that the system was operating according to their expectations.