FUZZI LOGIC DAN TEORI DEMPSTER-SHAFER UNTUK MENCARI PENYEBARAN PENYAKIT

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Abstract

Based on Cumulative Number of Confirmed Human Cases of Avian Influenza (H5N1) Reported to World Health Organization (WHO) in the 2013 from 15 countries, Indonesia has the largest number of death because of Avian Influenza which are 160 deaths. More than one billion people, one-sixth of the world's population, are affected by neglected diseases. Neglected tropical diseases kill an estimated 534,000 people world wide every year. Based on World Health Organization (WHO) report in the 2013 skin diseases still remain common in many rural communities in developing countries, with serious economic and social consequences as well as health implications.

This research aims to combine Fuzzy Logic and Dempster-Shafer theory by calculating the similarity between Fuzzy membership function in the context to predict the risk of disease spreading and finally to develop a realistic and useful Web mapping for displaying maps on a screen to locate the risk of disease spreading. Five different conditions for three different diseases are proposed. The risk of disease spreading include Highly Pathogenic Avian Influenza H5N1, African Trypanosomiasis and skin disease. This research has considered population density changes in an area to predict the risk of disease spreading. Population density in the area include very low, low, medium, high and very high.

The novelty aspect of this work is that basic probability assignment is proposed based on the similarity between membership function. This work is recommended to human experts and physicians who specializes in diagnosing and treatment of diseases. The human experts will find it useful as an aid in the decision making process and confirmation of suspected cases.

The risk of Highly Pathogenic Avian Influenza H5N1 spreading prediction obtained degree of belief 20% of very low, 34.7% of low, 18.3% of medium, 22.4% of high, and 19% of very high. The risk of African Trypanosomiasis spreading obtained degree of belief 17.3% of very low, 19.6% of low, 18.6% of medium, 22.5% of high, and 17.1% of very high. The risk of skin disease spreading obtained degree of belief 22.3% of low, 20.8% of very low, 19.3% of medium, 23% of high, and 21.3% of very high. In this research it is Fuzzy Logic and Dempster-Shafer theory, which resulted in a 0 % rejection.

Keywords: *Fuzzy Logic, Dempster-Shafer theory, the risk of disease spreading, Highly Pathogenic Avian Influenza H5N1, African Trypanosomiasis, skin disease.*