SC42050 Literature Assignment

Hybrid Fuzzy-Neural Networks for Determining Optimal Routing for Communication Networks

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This assignment concerns the application of hybrid fuzzy-neural networks for determination of the optimal route in a communicating traffic network.

In your report paper please make sure that the following questions are all addressed.

- What is a route guidance system in a traffic network? What is a *dynamic* route guidance system? What are the commonly used objectives mentioned in the paper that are utilized in finding the optimum route? Choose one of them and define a route selection function (either static or dynamic).

- What are the advantages of fuzzy logic and artificial neural networks in route guidance systems? Explain why these two approaches are combined as a hybrid fuzzy-neural system in the paper (Pang et al., 1999). Explain the application of the fuzzy system and the neural system in the hybrid algorithm being proposed in the paper.

- How is the hybrid system trained in the paper? Is this trained system applicable only to the special case being discussed in this paper or could the application be extended to any other similar system? explain.

References

Pang, G. K., Takabashi, K., Yokota, T., and Takenaga, H. (1999). Adaptive route selection for dynamic route guidance system based on fuzzy-neural approaches. *IEEE Transactions on Vehicular Technology*, 48(6):2028–2041.