Using Neural & Fuzzy-Neural Approaches in School Trip Distribution Modeling

Ali khodaii, Ph.D., Associate Professor, Dept. of Civil and Environmental Eng., Amirkabir Univ. of   Technology[1]
Houtan jebelli, B.S., Department of Civil and Environmental Engineering, Amirkabir Univ. of Technology[2]
Vandad Mazarei, B.S., Department of Civil and Environmental Engineering, Amirkabir Univ. of Technology[3]
khodaii@aut.ac.ir, (021) 64543010 [1]
houtan@aut.ac.ir, (0936) 2621644 [2]
vandad@aut.ac.ir, (0912) 7189169 [3]

ABSTRACT

Trip distribution is considered as the second step in urban transportation planning. Many models have been presented for this purpose. Trip distribution traditionally models with the deterministic variables although it seems affective variables in trip distribution molding are based on human perceptions. Since perceptions of people vary from one person to another, thus variables are imprecise and vague, so modeling the distribution of trips between zones is complex and dependent on the quality and availability of field data. Neural networks and neuro-fuzzy systems are suitable tools to modeling non-deterministic variables. This paper develops and presents a new neural network approach to model trip distribution. Neural networks are organized in different architectures and the results have been compared in order to determine the best fitting one. Different models were trained, validated and tested with a real database obtained from Tehran and then compared with Frater model made for school trip distribution in Tehran. The results of case study show that fuzzy model can be improved in order to accurately predict trip distribution regard to Frater model.

Keywords: **Trip distribution, neural trip distribution model, Frater Model, neuro-fuzzy systems**