

***EFFICIENT ROUTING OF AMBULANCES AFTERMATH OF A DISASTER***

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***Abstract—*** Aftermath of a disaster, there could be numerous people injured throughout the affected geographical area. In such a case, reaching an ambulance in a short time is utmost important. However, as the number of ambulances and their capacity are limited, to minimize the tour lengths and waiting times, one should route the ambulances efficiently. In this study, we focus on creating efficient routes for ambulances aftermath of a disaster considering limited number and capacity of ambulances. We aim to minimize the number of tours to be conducted by an ambulance and the average time to take all injured people to a hospital. This problem is related with the well-known capacitated Vehicle Routing Problem (C-VRP), and, as such, the proposed Genetic Algorithm (GA) is developed and tested using some of the VRP (C-VRP) benchmark files as the victim locations. For the number of victims we created various scenarios. The proposed GA aims to minimize the tour lengths of the ambulances while respecting all real life constraints given in these scenarios. In order to evaluate the proposed method, we also developed a method based on the Nearest Neighbor (NN) heuristic. The initial results show the success of the proposed GA over the NN heuristic.

***Keywords—***Genetic Algorithm, Vehicle Routing Problem, Capacitated Vehicle Routing Problem, Ambulance Routing