

Analysis of People's Evacuation or Life Patterns After Fukushima Daiichi Nuclear Accident

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Abstract: After severe disasters, the analysis of people's evacuation pattern or movements has become a very important topic. Generally speaking, the evacuation or life pattern of different persons after the disaster are usually different, such as some people may seek refuge in its parents' or relatives home, some people may go to shelter appointed by government, some people may go to nearby large cities, some people may just stay at home, but their lifestyle greatly changed, and etc. Therefore, the recognition or classification of these evacuation or lifestyle pattern after severe disasters (such as Fukushima nuclear accident) is very important. Based on the distribution of geographic location for individual person and people's movements after the disaster, we try to extract the lifestyle feature of an individual person, and construct training data samples.

Based on distribution of geographic location for an individual person at different time, it is easy for you to recognize different important places (based on the time) for this person, such as home, working places, shopping places (they are based on the distribution before the earthquake), new places (they are based on the distribution before the earthquake), and etc. Disaster and emergency management have become an increasingly important problem for Japan society due to the frequent earthquake and Fukushima nuclear accident since 11th, March 2011. At present, there is an urgent need to develop such an intelligent system that can objectively recording people's activities

during the disaster, analyzing their patterns of behavior, using this knowledge to develop predictive models, and simulating people's behaviors or movements while some similar disasters occur in future. Obviously, such information will help governments improve their evacuation strategies and transportation networks for future disasters, and play a vital role in various applications, such as Disaster Prevention and Management, Civil Engineering, Intelligent Transportation, and Urban Management. Therefore, the objective of this people is to develop such an intelligent disaster simulation and management system. In this paper, we utilized enormous set of GPS trajectory data (Congestion statistics by Zenrin Data Com.) to analyze people's evacuation or life pattern after Fukushima nuclear accident. Firstly, we try to extract some important places for individual person, and then utilize this information to construct a novel feature vector to encode people's life patterns. Lastly, we try to utilize this feature vector as samples to construct some classifiers to classify people's evacuations or life pattern after Fukushima nuclear accident.

Keyword : evacuation, lifestyle, disaster, refuge, classification