A Smart Tool for Training Timely Emergency Response

Feng-Tyan Lin[1*], Yi-Pei Liao[2]
1 Department of Digital Media Design, Asia University, Taiwan
2 Department of Urban Planning, National Cheng Kung University, Taiwan
E-mail: ftlin@asia.edu.tw[*]

Along with severe rainfalls, land slides have caused a lot of loss of life and property around the world. For example, on August 8th, 2009, the Xiaolin village at southern Taiwan was totally buried and around 500 people were killed by a deadliest landslide triggered by the typhoon Morakot with a record reaching the world's highest rainfall. One of reasons why this catastrophe happened was not to evacuate people timely. However, it is almost impossible for local emergency respond commanders to have sufficient experiences to deal with such extreme cases.

This research developed a game-like training tool by setting up various scenarios and asking the player acting as an emergency respond commander to evacuate people timely. The training tool was written using Netlogo, an agent based simulator. Parameters of scenarios included historical rainfalls according to Taiwan's Central Weather Bureau, distance between village and evacuation site, the number of people to be evacuated, the percentage of aged and disabled people, the degree of disaster awareness of local people, the potential location and probability of landslide areas. The commander should watch the increasing rainfall, judge the possibility of landslide, and estimate how much time for local people to evacuate from the village to the safe site based on their mobility and awareness. The goal of the commander was to issue an evacuation order such that all the people would move to the safe place timely. If the order was issued too late, some people would be killed or stuck by the landslide. On the other hand, if orders were often issued too early, people would not trust orders any more. People would postpone their evacuation actions or even ignore orders, which may cause severe loss of lives. This training will help commanders to learn more experiences and make appropriate decision.