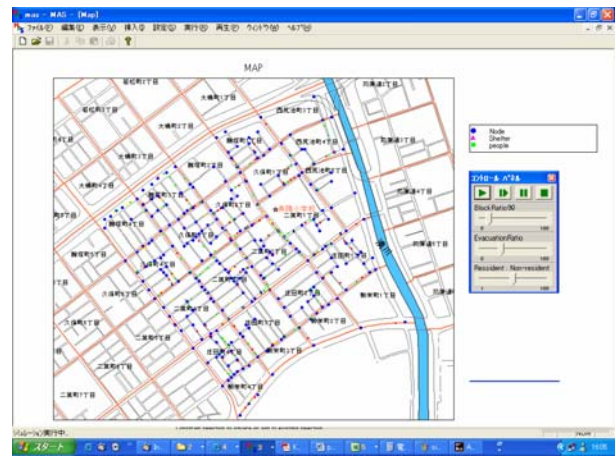# Multi-agent based collaborative modeling for flood evacuation planning
-case study of Nagata, Kobe
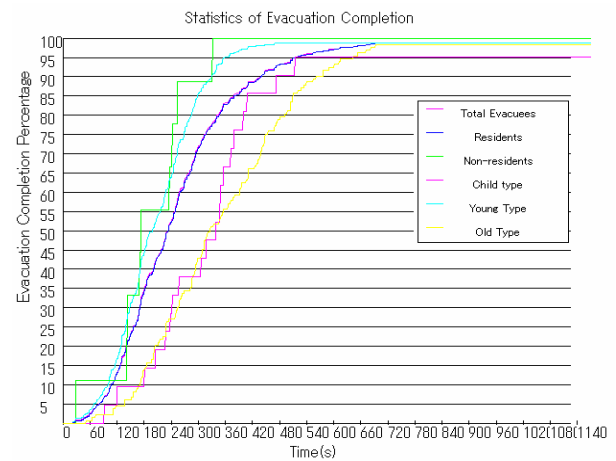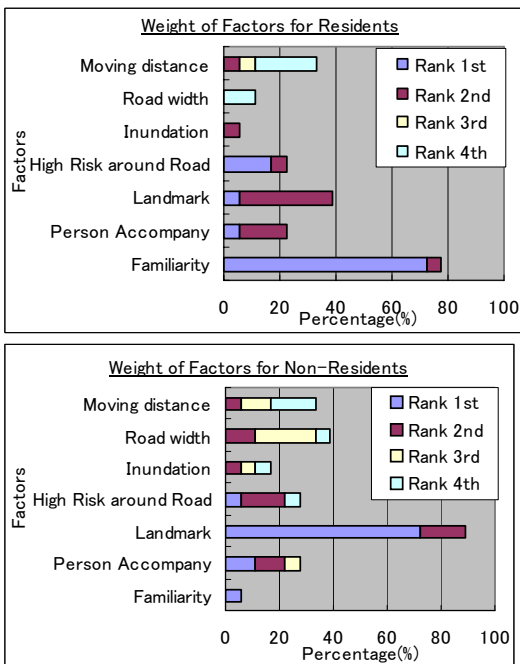
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In order to describe and simulate an aggregate evacuation behavior in a community-wide area based on a micro level of evacuation behaviors, we present an approach that addresses the knowledge acquisition process through a collaborative modeling which build in a multi-agent based evacuation simulation system (EvaSim). In this paper, we show the process of using the collaborative model to build and improve the EvaSim system. The EvaSim is a tool to analyze and improve the local evacuation planning through simulating people's evacuation behaviors.

The EvaSim system was used as a medium to communicate with people from "Zonta club" who had their regular meeting on Oct.11, 2006. Questionnaires were carried out and the results are shown as follows. From this survey we get the knowledge on how they

evaluate each factor of evacuation routes as residents in local area and non-residents in an unfamiliar area.

The EvaSim simulation system is developed based on KKMAS, the platform of multi agent development. The following shows a main simulation interface.

The following figure shows how the evacuation completion percentage changes with time.

In the near future, we will closely analyze the aspect of self help and mutual help in Nagata ward. How to empower the community through the "crossroad" gaming approach, questionnaire and workshops etc will also be discussed.