H. NAKAMOTO, T. MATSUMOTO, M. GOKA, Y. KITAGAWA, H. KAMEYAMA, Y. KAMISE, K. OMORI, I. KITAYAMA, K. SUMIYA. Development of multi-camera gate for fall detection in nursing home with face-recognition. Gerontechnology 2010;9(2):313; doi:10.4017/gt.2010.09.02.198.00 **Purpose** Corridors in nursing homes are used to move through, and to spend time in as a dayroom by many residents with dementia. Therefore, many falls etc. occur in the corridor. These incidents are mainly detected by the care staff, but detection is sometimes delayed. It is necessary to detect these incidents earlier. We propose a new, multi-camera gates system which can detect these incidents automatically, with face-recognition. **Method** We developed a multi-camera gate. This gate is one unit of our multi-camera gates system. The gate has a PC and 5 cameras which are composed of 2 front cameras, 2 side cameras and a ceiling camera. Each camera is connected to the PC via a LAN network. The PC analyzes images sent from each camera with a face-recognition technology[3] and detects incidents such as a fall by the position of the tenants' heads. **Results & Discussion** Accuracy of the face-recognition and fall detection were confirmed with our developed camera gate. In cases of changing positions in the gate and conditions of upright walking or wheelchair usage, the face-recognition accuracy was 97.5%. When actors fell in the gate, matching ratio and recall ratio of incident detection were both 96.7%. While there is room for improvement of the cameras' performance and fall-recognition method, our developed gate has high accuracy from experimental results. This research has been supported by Strategic Information and Communications R&D Promotion Programme of The Ministry of Internal Affairs and Communications, Japan.

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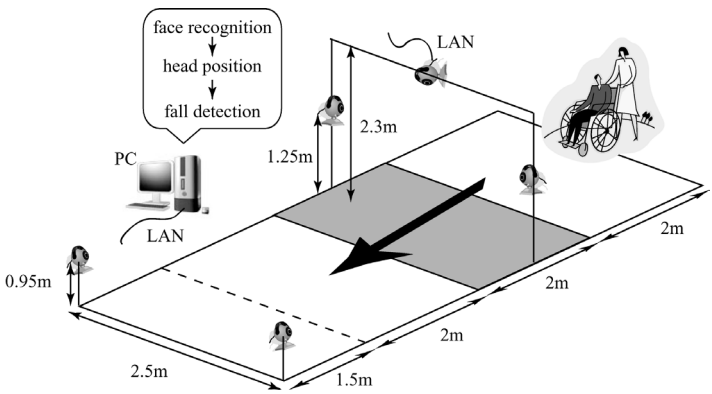

Figure 1 Multi-camera gate