

## **Behavior Analysis Based on Nine Degrees of Freedom Sensor for Emergency Rescue Evacuation Support System**

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**Abstract :** Around the world, there are frequent incidents of natural disasters, such as earthquakes, tsunamis, floods, and snowstorms, as well as man made disasters such as fires, arsons, and acts of terror. These diverse and unpredictable adversities have resulted in a number of fatalities and injuries. If disaster occurrence can be assessed quickly and information such as the exact location of the disaster and evacuation routes can be provided, victims can promptly move to safe locations, minimizing losses. This paper proposes a behavior analysis method based on a nine degrees-of-freedom (9-DOF) sensor that is effective for the emergency rescue evacuation support system (ERESS), which is being researched with an objective of providing evacuation support during disasters. Based on experiments performed using the acceleration sensor and the gyroscope sensor in the 9-DOF sensor, data are analyzed for human behavior regarding stationary position, walking, running, and during emergency situation to suggest guidelines for system judgment. Using the results of the experiments performed to determine disaster occurrence, it was confirmed that the proposed method quickly determines whether a disaster has occurred.

**Keywords :** behavior analysis, nine degrees of freedom sensor, emergency rescue, disaster

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