

## **ABSTRACT**

Fall accidents are one of the biggest causes of death throughout the world, the difficulty of early detection of accidents will push the effects of injury to a further level, leading to the risk of death. With the bathroom being the location of the most accidents in the house, on the other hand the bathroom is the only place with undeniable privacy.

Therefore, to prevent undesirable things from happening, a method is needed to detect early and provide warning information that a potentially fatal fall has occurred. Because this system will be implemented in the bathroom, a system is needed that can fulfill aspects of user comfort and privacy. Therefore, an Elderly Fall Detection System was designed which was equipped with a radar sensor.

The result of the design produces a fall detection system with an accuracy at 98%, precision for fall class at 96%, and recall/sensitivity for fall class at 100%. The visualization results of the system also succeeded in maintaining privacy, as agreed by 81% of respondents.

**Keywords:** Fall detection, Bathroom, Radar, Point Cloud