

# THE STUDY OF USING PARTICLE FILTER METHOD COMBINED INDOOR MAGNETIC MAP AND PEDESTRIAN DEAD RECKONING FOR INDOOR POSITIONING.

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In the past, we often needed a map to find out the destination in an unfamiliar environment. With the appearance of Global Positioning System, the outdoor positioning performance has approached perfection. However, due to the environment obstruction, the indoor signal will reduce the positioning accuracy. Therefore, indoor positioning technology has become the focus of research and development in recent years.

In the history of indoor positioning technology, target positions were detected by sensors, radio signals and image or Pedestrian Dead Reckoning (PDR). All the technologies above have their own advantages and disadvantages, like costly or low accuracy. It is necessary to combine the different technologies to achieve a comprehensive consideration of cost, efficiency and accuracy. This study used the built-in magnetometer of the smart phones to build the magnetic field maps of the floor and also accelerometer as an aid to achieve indoor positioning. This study effectively improved the accuracy and efficiency of indoor positioning by using the particle filter method combine PDR with the magnetic positioning.

Keywords: Indoor positioning, Magnetic field map, Pedestrian Dead Reckoning, Particle filter

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