Map UI Design of IoT Application Based on Passenger Evacuation Behaviors in Underground Station

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Abstract : When the public space is in an emergency, how to quickly establish spatial cognition and emergency shelter in the closed underground space is the urgent task. This study takes Taipei Station as the research base and aims to apply the use of Internet of things (IoT) application for underground evacuation mobility design. The first experiment identified passengers' evacuation behaviors and spatial cognition in underground spaces by wayfinding tasks and thinking aloud, then defined the design conditions of User Interface (UI) and proposed the UI design. & nbsp; The second experiment evaluated the UI design based on passengers' evacuation behaviors by wayfinding tasks and think aloud again as same as the first experiment. The first experiment found that the design conditions that the subjects were most concerned about were " map" and hoping to learn the relative position of themselves with other landmarks by the map and watch the overall route. "Position" needs to be accurately labeled to determine the location in underground space. Each step of the escape instructions should be presented clearly in "navigation bar." The "message bar" should be informed of the next or final target exit. In the second experiment with the UI design, we found that the "spatial map" distinguishing between walking and non-walking areas with shades of color is useful. The addition of 2.5D maps of the UI design increased the user's perception of space. Amending the color of the corner diagram in the "escape route" also reduces the confusion between the symbol and other diagrams. The larger volume of toilets and elevators can be a judgment of users' relative location in "Hardware facilities." Fire extinguisher icon should be highlighted. & guot; Fire point tips& guot; of the UI design indicated fire with a graphical fireball can convey precise information to the escaped person. " Fire point tips" of the UI design indicated fire with a graphical fireball can convey precise information to the escaped person. However, "Compass and return to present location" are less used in underground space.

Keywords : evacuation behaviors, IoT application, map UI design, underground station

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