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V.I.B.E.S. Technology: Saving Lives with Algorithms

Visual impairment is defined as a loss of vision. Many people worldwide are visually impaired. In fact, approximately, 10 million people are visually impaired in the United States alone (KidsHealth, 2012). Because of this amount of people, many devices and objects have been used in order to help them in their daily lives, including seeing-eye dogs and canes (American Foundation for the Blind, 2014). But, what if they were stuck in an unfamiliar building and did not know how to get out?

V.I.B.E.S. Technology stands for *Visually Impaired Building Evacuation System*. This mobile device application uses Floyd-Warshall's shortest path algorithm to help a visually impaired person navigate out of a building in case of an emergency, such as a fire.

The program works by taking the formula, (L/8)-1, and using the floor plan with the certain lengths of the hallways that are in the adjacency matrix. The administrator just has to take a sketched floor plan of the building and put it into the system by scanning it in. After that, the system will ask for the measurements of each hallway. The numbers represent the lengths between the points on the weighted graph, but the system won't need it to be that specific. Just the overall distance of each hallway will be needed. Then the system will calculate the number of beacons necessary using the formula previously stated.