Navigate people indoors

Abstract Functions in Application	Data Collection and Pre-processing	Get the User's Current Location	Calculate Path from Start to End	Visualize Path
	Function: 1. Collect building structure data 2. Pre-process building structure data into a format that can be displayed and used to navigate customers. 3. Save mapping data structure in order to save the destinations location	Function: 1. Calculate the user's position	Function: 1. Calculate the path from a start position to an end position 2. The result may be different based on different strategy	Function: Display the path found for user
	Input: Origin building structure data	Input: 1. User location information 2. Organized indoor data	Input: 1. Format start position data 2. Format end position data 3. Organized indoor data 4. Strategy (Optional)	Input: 1. Organized indoor data 2. Path
	Output: Organized indoor data Output Requirements: 1. The data must have the ability to show a person position in the building 2. The data must show the solid locations(like different rooms) in the building 3. In order to store location information, the method can be like "key-value"("room1": (x1,y1)) or some orher data structure	Output: Format user's location data based on organized indoor data	Output: Path from the start position to the end position (Based on strategy) Strategy Explain: The strategy is like: 1. Shortest time 2. Shortest distance 3. Handicap friendly (it will be very exciting if we can achieve it.)	Output: Indoor map with path and can show user's position change dynamically
Potential Solution AR Approach	Tech in need: AutoCAD Python	Tech in need: Trilateration Based on Bluetooth Beacon	Tech in need: BFS Algorithm	Tech in need: AR, Computer Version
	Input: Data points along the way in the building	Input: 1. Router MAC address that user connecting 2. Router coordinate points	Input: 1. Start position point 2. End position point 3. Moveable coordinate points	Input: Format path coordinate points
	Pre-processing: Label the point that under a Beacon	Calculate user's position by using fingerprinting method	Calculate the path based on strategy	Plot the path point into AR model then display it
	Output: 1. Passable coordinate points 2. Beacon coordinate points with its MAC address	Output: User's coordinate position	Output: Format path coordinate points	Output: Users can see real-time directions through AR
Potential Solution 3D Map Approach				