# One Page Summary of the Project

Smart Lobby Access Management System

## Smart Lobby Access Management System consists of 4 main subsystems:

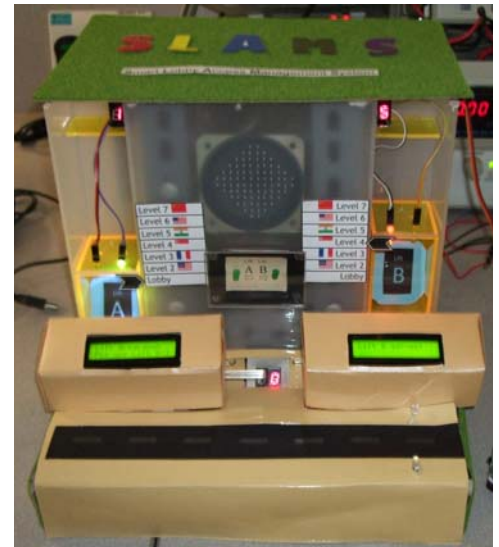### Smart Gantry System

- Building access card scanner for employees to scan their access card
- Gantry gate opens upon successful authentication
- Gate closing detector system to close gate when employee walks past gantry
- Integrated with Smart Lift Grouping System to group employees appropriately into Lifts A and B (Information about employees' office locations stored in access cards)

### Smart Lift Grouping System

- Based on a score-based algorithm
- Assigns the most suitable lift to employees based on their office's level
- Grouping based on proximity of target offices' locations into a single lift.
- Minimises the number of levels each lift has to go and minimises impacts on other preceding employees in the queue
- Minimises the waiting time of employees
- Algorithm also controls movement of lifts

### Smart Audio Visual Information System

- Audio System:
    - Provide lift assignment information for visually handicapped employees
    - Activated also during Fire Emergency situation to notify employees of the fire
    - Activated as well during Overcrowding situation
- Visual  System:
    - A "TV" screen to direct employees to the assigned lift upon scanning card
    - Displays at lobby with real-time updating to show allocated levels for lifts
    - Real-time displays showing current level of lifts
    - Counter to display number of employees at lobby

### Lift Mechanical System

- Consists of 2 lifts for more realistic portrayal of scenarios
- Lift control mechanism using stepper motors for better accuracy
- Assigns the most suitable lift to employees based on their office's level

## 3 scenarios are also incorporated to inject further realism into the project:

### Overcrowding

- Max of 16 employees allowed at lobby to prevent overcrowding
- Once 16 employees at lobby, gantry will not open for further influx of employees
- Overcrowding announcement will be played

### Fire Emergency

- Once fire is detected, lifts will stop operations and stop at the nearest safest level.
- Gantry gates opens to allow for swift evacuation of employees
- LCD displays and sound system will be activated to inform employees of the fire

### Lift Breakdown

- If a lift breaks down, the employees assigned to that lift will be reallocated to the other lift.
- Maximum number of employees allowed at lobby reduced from 16 to 8 instead.