
Smarty Home

Motivation:

One of the most valuable things for people today is time. We aim for people to spend more time in their home where they should be the most comfortable, by saving as much time as possible at home.

Functional Requirements

Requirement Identifier	Priority (High/ Medium / Low)	Description
FR-1: lockDoors	High	The system has to lock the doors.
FR-2: turnOnOffLights	High	The system has to turning on / off lights
FR-3: cutOffElectricity	High	The system has to cut off electricity.
FR-4: calculateSleepTime	Medium	The system can calculate the time of sleep.
FR-5: checkTemperature	High	The system has to check temperature of house parts.
FR-6: changeTemperature	High	The system has to change temperature.
FR-7: faceRecognition	Medium	The system can check the faces of visitors.
FR-8: Call911	High	The system has to call 911.
FR-9: alarmToOwner	High	The system has to alarm to phone of homeowners.
FR-10: controlWithMobileApp	High	The system has to be controlled via an application.
FR-11: checkFullnessMachines	Low	The system may warn for fullness of machines.
FR-12: checkFluidLevel	Medium	The system can warn for fluid level of floor.
FR-13: voiceCommand	Medium	The homeowner can command with his / her voice.
FR-14: giveInfoOfWeatherCondition	Low	The system can give information about weather condition.

NonFunctional Requirements

Requirement Identifier	Priority (High/ Medium/ Low)	Description
NR-1: timeOfLockDoors	High	The doors has to be locked 1 minute after the homeowner leaves the house.
NR-2: remoteLockDoors	Medium	The doors can be locked with mobile phone.
NR-3: timeTurnOffLights	Medium	The lightsystem can be turned off if no actions for 30 minutes.
NR-4: voiceCommandOfLights	High	The lights has to be controlled with voice of homeowner(s).
NR-5: cutOffElectricityRemotely	Medium	The electricity system can be cut off via mobile application.
NR-6: calculateMethodOfSleepTime	Medium	The time of sleep of homeowner(s) can be calculated with smart mattress and sensors. Smart mattress can track movement, plus heart and respiratory rates. If these rates are under personal conditions, then system start time of sleep.

NonFunctional Requirements(cont.)

NR-7: increaseTemperature	High	The temperature can be increased if it is under the 21 °C.
NR-8: descreaseTemperature	High	The temperature can be descreased if it is over the 25 °C.
NR-9: checkFaceWithCamera	High	The door camera checks all face of visitors. If this face is not declared in system, system can warning to phone of homeowner(s). It's display looks like a phone calling. Homeowner(s)can do nothing for this situation or call 911 with one finger movement.
NR-10: warningForFullnessOfMachines	Low	Check the fullness of limitable machines(washing machine, coffee machine, etc.) and system can give a warning beep if it is reached to maximum level.
NR-11: warningForFluidLevel	Medium	Check the fluid level of ground and alarm to phone of homeowner(s) if fluid level is over 10 litres.
NR-12: InfoWeatherInFrontOfFaucets	Low	The system can inform about the weather condition to homeowner(s) in front of faucets in the morning during washing face.

Actors

- Homeowner
- House System
- Doors
- Lights
- Smart Mattress
- Electricity System
- Air Conditioner
- Cameras

Actors(cont.)

- Limitable Machines
- Floor
- Police Station
- Facebook Database
- Visitor
- ASV (Audio System for Voice commands and feedbacks)

Use Cases

Use Case Identifier	UC-1
Use Case Name	FaceRecognize
Participating Actors	Homeowner, House System, Visitor, Doors, Camera, Facebook Database, Police Station
Flow of events	1. Camera notices the person in front of the door 2. And cameras try to match the face with the data in database. 3. The system sends a notification to the phone of homeowner(s) if it is not in the database. 4. Connecting directly to camera homeowner sees the person in front of the door. 5. Homeowner has two options for making a choice: 5.1. If he chooses the pass option, the person can get home. 5.2. If he/she chooses emergency option, the home system sent a message to the nearest police station.
Entry condition	Visitor comes in front of the door.
Exit conditions	Homeowner chooses sent a message to police or do nothing.
Related non-functional requirements[1]	NR-9: checkFaceWithCamera

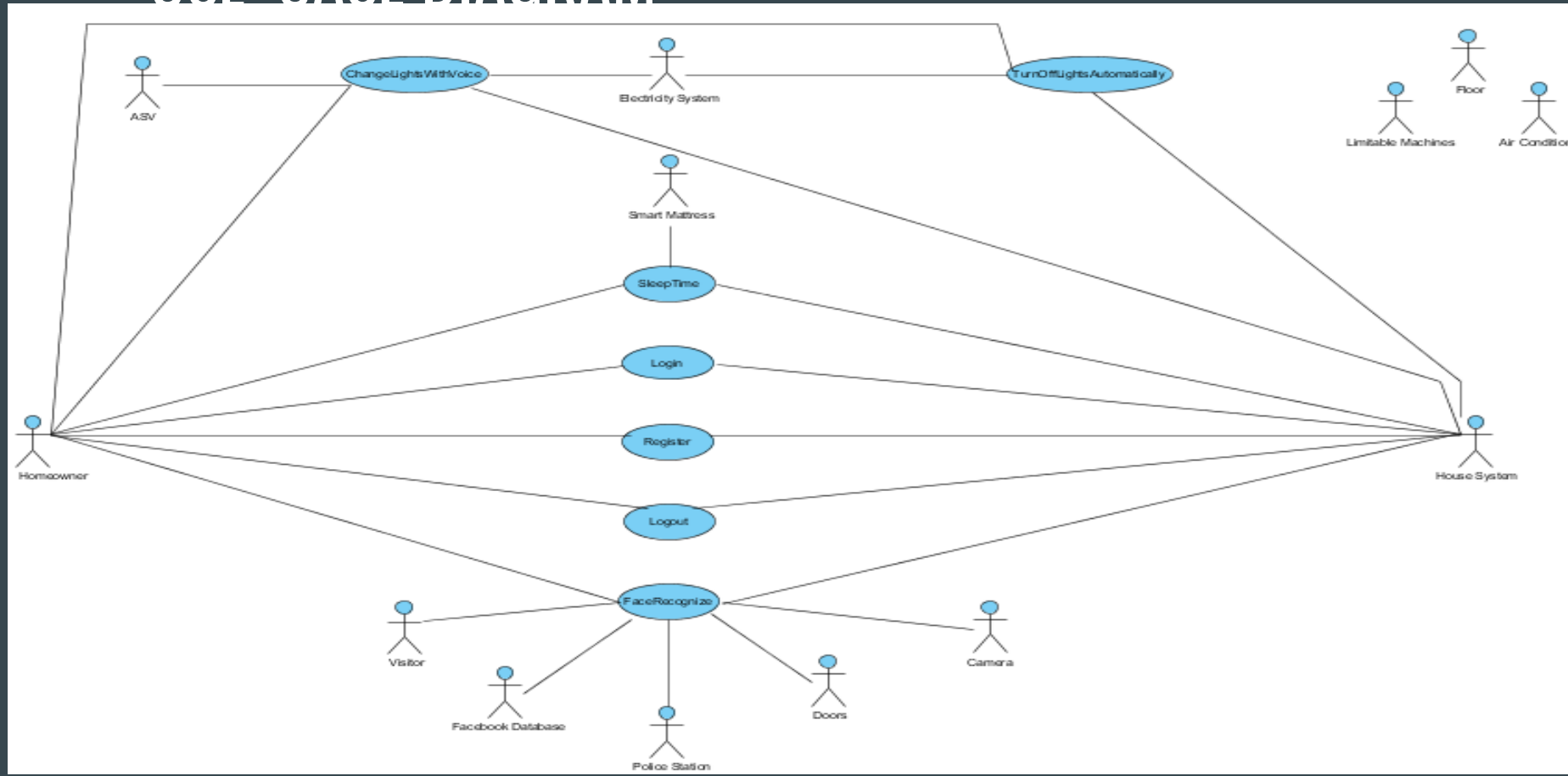
Use Case Identifier	UC-2
Use Case Name	SleepTime
Participating Actors	Homeowner, House System, Smart Matress
Flow of events	1. Homeowner lays down on the smart matress. 2. House System can sense movements and it can start the timer if homeowner sleeps. 3. Then, it stops when homeowner gets up.
Entry condition	Homeowner lays down on the bed.
Exit conditions	Homeowner gets up.
Related non-functional requirements[2]	NR-6: calculateMethodOfSleepTime

Use Cases(cont.)

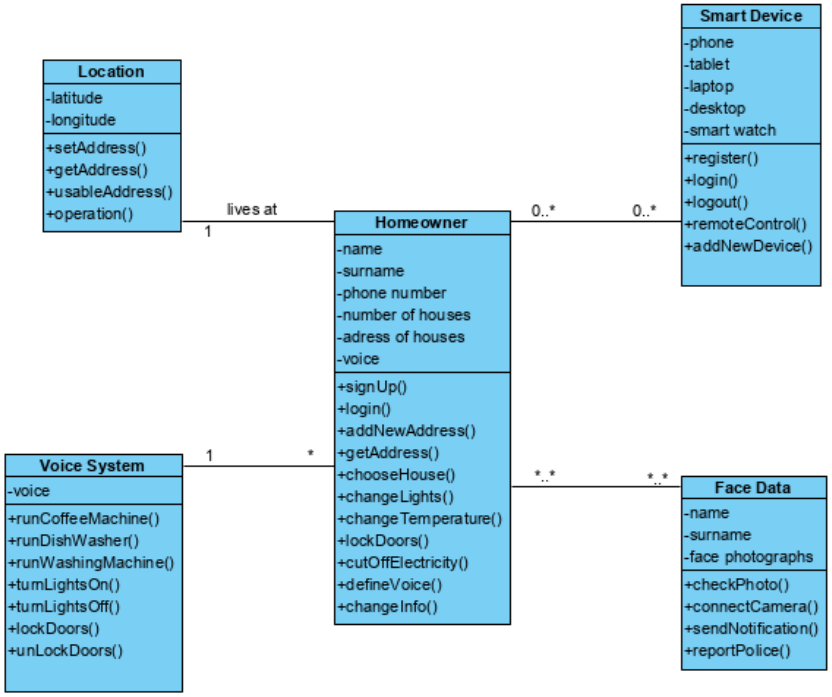
Use Case Identifier	UC-3
Use Case Name	TurnOffLightsAutomatically
Participating Actors	Homeowner, House System, Lights, Electricity System
Flow of events	1. House System checks for movements. 2. House System does not detect any movements of houseolders for 30 minutes. 3. House System turns off lights automatically.
Entry condition	House System checks for movements.
Exit conditions	House System turns off lights automatically.
Related non-functional requirements[3]	NR-3: timeTurnOffLights

Use Case Identifier	UC-4
Use Case Name	ChangeLightsWithVoice
Participating Actors	Homeowner, House System, Lights, Electricity System.AVS
Flow of events	1. House owner commands to AVS with voice. 2. If house owner wants to turn the lights on, 2.1. House System will turn on the lights.. 3. If house owner wants to turn the lights off, 3.1. House System will turn off the lights..
Entry condition	House Owner commands to AVS with voice.
Exit conditions	House System turns on / off the lights based on voice command.
Related non-functional requirements[4]	NR-4: voiceCommandOfLights

USE_CASE DIAGRAM



CLASS DIAGRAM



Team Members

-Project Leader: Burak Can Onarım

-Project Researcher : Sümeyra Özuğur

-Project Designer : Irmak Tekin

Thank you for Listening