DEPARTMENT OF COMPUTER SCIENCE
ARTIFICIAL INTELLIGENCE LAB
PROJECT PROPOSAL FORM

3rd SEMESTER	Fall	BS (AI)-3	2022

TITLE OF PROJECT

Intruder Detection and Localization

Group Members

S#	Student(s) Name	Registration Number
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EXECUTIVE SUMMARY OF PROJECT PROPOSAL

We are proposing to develop an 'Intruder Detection and Localization Agent' in Java and we will also be making a knowledge base of the system and agent using prolog language and GNU. GUI will also be used in some ways with the programming language Java. The agent would go into the apartment complex and search on all the floors until it finds the intruder. Then go onto that floor and look into each apartment in order to locate the intruder using the signs and signals left by the intruder, for example, footprints, broken windows, or broken door locks.

We would be giving a clean layout to the system so that it is easy to use. And agent does not face a hard time navigating through the apartment complex. This project might include or exclude some functionalities depending on the need and importance while developing the final system. Later on, we'll be connecting the Intruder Detection and Localization System built using Java with the prolog for knowledge base building.

PROJECT PURPOSE, SCOPE, AND OBJECTIVES

Project Purpose:

After the Covid, and its effect on the job market, unfortunately, many people have taken this route of crime. There has been a significant increase in the crime rate in a couple of years. As much as we'd like to leave this to the police, we all know how incompetent they are. And even if they arrived on time, it would take them so long to figure out where the intruder was and where has he gone. This is also due to human reaction time and the limited ability of us human beings.

Hence, in our proposed project, "Intruder Detection and Localisation System", an artificial agent could make this task easier and reduce the chances of errors. On top of that, it will be increasing the success rate. It will be user friendly, simple, fast, and cost-effective system. It will be making sure the innocent people involved have returned to safety.

In addition to this, police will also be able to view the status of the burglary, and if the intruder is caught. They will be able to access the details of the intruder if there are any. The location from where they managed to enter. The legitimateness of the case, to see if it was just a false alarm. Furthermore, developing this system with Java would be a perfect choice because Java is platform-independent and easier to move from one system to another.

Scope:

Our purposed project tends to find the intruder that has just entered a particular facility, be it an apartment complex or any other type of facility. This eases the task of police and detective agencies. So, we can see it being implemented in the real world very soon. As the world is shifting to automation, fewer and fewer jobs would be there in the future that would require human labor. Robots and artificially intelligent agents are the future of this world.

Objectives:

There are multiple objectives of our project. Firstly, we have to find out if there is an intruder present, and if yes, then where is it? Locating the intruder, or if unable to do that, at least find out about the source of that intruder's entrance. Be able to reduce the time needed to catch the intruder to increase the success rate of catching it. Be able to reduce the human resources required to fulfill this task. Ease the task of police. Making sure the innocent bystanders or victims are safely taken care of in any way necessary.

PROJECT DESCRIPTION

Our project "Intruder Detection and Localization" is going to begin with figuring out the kind of facility it is working with. Let's take an apartment complex as an example for the start. Our agent will begin by entering the 10-floor building and look for the signs of an intruder, like footprints, broken windows, or broken door locks. This will tell the agent where to go next to look for the intruder.

The intruder, however, will have been already placed somewhere in one of the apartments on a certain floor through randomization. A random number will be generated in the java program via a random number generator which will help the knowledge base in prolog to set an intruder at the random place so we know it is not hard coded.

After confirming that there is indeed an intruder, the agent will move into the building and scan all the floors until the agent finds what is it looking for. There will be a blueprint of the building, and then when the agent finds what floor the intruder is on, it will go on that floor and then look for the intruder signs on that floor. There will be more than one apartment on each floor, so the agent will have to figure out which apartment is the intruder in or at least where he or she broke in from. Then after locating the intruder, it will identify and save all its details if later asked by the police.

The agent then will go on to the bystanders, or the victims of the burglary to make sure they are safe, and guide them to evacuate safely so that they do not have to interact or mistakenly face the runaway intruder.

The details of the intruder will be saved, and there might be an additional module that will offer the details of that intruder after verifying if they are a police officer or not. And if the details are required or not.

TEAM PROFILE

We are 3 team members; Hafsa Hafeez, Haris Aamir, and Muneeza Iftikhar.

Individual team member profiles are as follows:

Muneeza Iftikhar:
I completed my A levels before joining the university. My previous experience includes programming in C++ programming where I was tasked to design a basic restaurant management system that takes orders and generates a receipt. Furthermore, a lucky draw if a certain price quota is reached. I have expertise in design, organization, and management and am able to successfully manage digital and physical spaces. Furthermore, designing is one of my hobbies, though at an amateur level I enjoy working on it.

Hafsa Hafeez Siddiqui: Experienced in coding in PsuedoCode and VisualBasic for O'Levels Computer Science. I completed my A levels before joining the university. In the first semester, we worked with C++. Designed a user-based restaurant management system, that takes orders and generates a receipt. Furthermore, a lucky draw if a certain price quota is reached. I have expertise in design, organization, and management and am able to successfully manage digital and physical spaces.

Haris Aamir: Experienced in Python and C programming before starting at Bahria University. Here at Bahria, I got my hands set on C++ and Java, the basic and complex OOP Concepts. Hence, I'm skilled at programming so I am going to be handling a slightly larger part of programming and will be managing that.

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Irrespective of our personal experience, knowledge, and strengths, we have and are willing to contribute equally to this project to execute our idea to the best of our ability.

ASSUMPTIONS AND CONSTRAINTS

Assumptions:

- We have assumed that an intruder is present in the facility because that is when the service of this agent has been called.

Constraints:

- We have overlooked some of the real-life applicable things like how will the agent move in the elevator or stairs.
- As we have tried implementing these Artificial Intelligence concepts in the lab over the half semester on lisp, we faced so many difficulties as there is no proper support online for that outdated language, and no properly functioning IDE either.

PROJECT DELIVERABLES NOT CHANGEABLE

Deliverables include

- Software Project Proposal.
- Project progress
- Project report
- Team members' work, as per their contribution, you should have to be honest with your future.

For Teacher Use Only

REMARKS

Course Teacher Name		**Signature**		**Date**	

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Lab Engineer Name		**Signature**		**Date**	