**Proposition of different project for the “système intelligent” course**

1. **Home monitoring system**

In order to warn the occupants of the house of a possible intrusion, a pi camera is placed in the hall of the house. The faces of all the resident of the house are registered beforehand. Thanks to the Raspberry and the Pi camera, the video stream of the hall is analyzed. If a person not residing in the house is detected while the alarm is set, a siren sound and a flashlight signal are emitted by an Arduino.

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In order to facilitate access for house residents, a pi camera is placed near the front door, pointing to people wanting to enter. The faces of all the resident of the house are registered beforehand.

Thanks to the Raspberry and the Pi camera, the video stream is analyzed. If the person is recognized by the system and is allowed to enter, the door is unlocked via the Arduino. If the person is not recognized by the system or is not allowed to enter in the house, a doorbell rings to notify the residents of a guest coming in thanks to the Arduino. Furthermore, a picture of the guest is sent to the resident by mail, saved into the Raspberry Pi and displayed on a screen inside the house.

In the event that is dark, and a person is detected by the Raspberry, the outside light is switched on by the Arduino. After a few seconds, the light is switched off.

1. **Chicken coop monitoring system**

In order to help the poultry farmers to prevent the arrival of a predator and thus the destruction of the henhouse, a pi camera is placed in the enclosure. Thanks to the Raspberry and the Pi camera, the video stream of the enclosure is analyzed. If a predator such as a fox approaches the enclosure, an audible and visual alarm is triggered by an Arduino, followed by the closure of the henhouse.

1. **Gestural home automation**

The flow of images of the user’s gestures is taken by the pi camera and is then processed by the Raspberry in order to send commands to the Arduino to raise/lower a shutter or open/close a blind for example.

1. **Smart company parking**

A shop offers its customers an open-air car park. In order to inform customers passing in front of the car park, a pi camera and a raspberry are used to count the number of empty parking spaces. This number is displayed on the LCD screen connected to an Arduino. This equipment also manages two barriers for the entrance and exit of the car park.

1. **Smart traffic light**

The crossroads of a busy main road is equipped with a pi camera. Connected to a raspberry, this camera monitors the number of vehicles stopped at the red light. The traffic light is controlled with an Arduino. The goal is to optimize the number of vehicles stopped according to the traffic.