YorRobots Internship – Advanced lock system

Supervisor Information

To-do

Project description

My project is a dual-lock system, that being a digital numpad combined with facial recognition software. The project falls into the robotics category as it will use a raspberry PI (or possibly an Arduino) to control the lock / perform the facial recognition. The pricing for these systems is generally very high, with some systems hitting around the £3000 mark. I expect to be able to produce a system that works identically to these high-priced ones but at a much lower, reproducible price. This will have a large impact on the market as people are always looking for good secure locks with great functionality such as facial recognition and a numpad for ease of use. However, they can rarely afford the large price tag, this will change that entirely and hopefully change the future of these locks in the market.

A large part of my research will go into the facial recognition side, facial recognition is a notoriously resource intensive computation, so to perform such a resource intensive task on a small board like the raspberry pi will pose a challenge. However, I am greatly looking forward to researching what the best way to overcome these problems will be, looking into both existing ideas as well as hopefully forming some original ones myself. My A-level CS project involved a facial recognition system so I already have some pre-existing knowledge on the types of methods for facial recognition which will help me accelerate at a faster pace.

I will be producing both a physical prototype as well as writing software for it, the software side will be written with Python (3) as this is the language I know proficiently, as well as possibly writing some modules in C as the processing power of C is much higher and Python can import C into it natively. I will use a 3D printer to create a housing for the entire system to make it look like a professional piece of hardware that doesn’t have protruding wires possibly causing hazards.

I will be able to work remotely as all the hardware I would like is readily available for purchasing online with quick delivery times at a relatively low cost. I will keep a logbook of what I do each day as well as plans or ideas I have for the future, keeping in close contact with my supervisor so they can advise me if I am straying away from what I should be doing. My supervisors will also be able to help make sure that I am doing good work and suggest resources such as research papers that might possibly help with my own personal research/development.