# Research done into the Domain

In order to strengthen familiarity with the subject, web-based research was conducted. After the time allocated for research had passed, discussions with regards to research done were held, highlighting key attributes for the allocation process as well as ensuring a global understanding within the capacity of the work to be carried out.

In this instance, allocation is to occur between students and areas proposed by supervisors, dependent on preferences provided by students. Also, allocation is to be dependent on a quantified quota that supervisors have specified by area or as a total quota. Individual preferences are to be submitted through a web form and subsequently passed to an algorithm that serves the purpose of allocating areas to students in an optimally stable manner. Doing such involves the algorithm attempting to appoint the highest available individual preference to each student. Following the completion of allocation, results are compiled and stored with the possibility of later use. Allocation like such may be observed in other instances, including hospitals, where doctors are allocated to particular hospitals based on select criteria.

The allocation results are to be affected by students in the following order:

1. Students submit individual preferences.
2. If two or more students choose the same first preference, the student with the highest average mark is allocated to the area.
3. If students happen to have the same average, the area is allocated to the student with the earliest date of submission.

It is vital that the global quota between all areas and supervisors, is greater than the number of enrolled students. This is to be done as to avoid the eventuality that a student is not allocated at all due to no existing availability, having all areas and supervisors depleted of available places.

As defined by [1] and [2], a properly functioning Student-Area allocation system must ideally consist of:

* Completion in a minimal amount of time, regardless of the size of students, supervisors or areas sets.
* No student is to be allocated to an area not found within the submitted preference list.
* Quotas are not to be exceeded.
* There is no dispersion of resultant data.

Adhering to all the above provided points proves to be imperative. Also, the presentation of a solution that is of higher quality than the currently utilised system is to be done in accordance with best practices from both a User Interface (UI) and functional perspective.

[1] Salami, H.O.; Mamman, E.Y. A Genetic Algorithm for Allocating Project Supervisors to Students. *Int. J. Intell. Syst. Appl.* **2016**, *10*, 51–59

[2] arland, J.; Pitt, S. Venetia Saunders Factors affecting student choice of the undergraduate research project: Staff and student perceptions. *Biosci. Educ.* **2005**