DATING YOUR SUPERVISOR: A GAMIFIED APPLICATION FOR ALLOCATING STUDENT DISSERTATION SUPERVISORS

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Abstract

Being an academic comes with many challenges, one such challenge is ensuring student satisfaction, and one of the large contributors to student satisfaction is the allocation of final year dissertation project supervisors. The paper outlines a novel way to allocate third year project students and their respective dissertation supervisors. The aim of this project is to evaluate what contributes to student satisfaction, and if we can influence the perceived satisfaction of a student through an online ‘dating’ style gamerfied application. We present the rationale for development of such a system, other mechanisms by which we have attempted to carry out project allocations and the resulting development of this application. Due to the nature of the 3rd year project taking 1 year and the module feedback for this taking place after the delivery of the module, the final results of this project will not be known for 12 months.

Keywords: Student Engagement, Phone App, Gamification, Tinder.

1 INTRODUCTION

Universities in the UK are faced with a number of ranking metrics that position them within other institutions in the UK, this allows for students to select which university they may wish to attend based on the ranking of various metrics. These metrics and ranking are numerous in quantity [1], but in short include metrics such as, Research Excellence Framework (REF), National Student Survey, Teaching Excellence Framework (TEF), Destination of Leavers in Higher Education (DLHE), and the list goes on.

However, one of the more reoccurring metrics in these lists and tables comes in the form of ‘Student Satisfaction’. Its definition is: ‘A measure of student views of the teaching quality at the university’ [1]. Well, what does this mean? Ostensibly students complete a number of surveys whilst at university, the main two being ‘Module Surveys’, ‘NSS’ [2]. The first of these is an internal audit, whilst the second is linked to university league table positions [3]. This shows that student university decisions can be influenced by University league table positions which are influenced by the NSS which is in turn influenced by student satisfaction.

What is this telling us? There are two things that happen in the final year of university for an Undergraduate Student: 1 – They Complete the NSS, 2 – They undertake a very substantial final year dissertation project. It is this dissertation project which can have a large influence on a student’s satisfaction when they complete the NSS.

At the University of Lincoln’s School of Computer Science, final year undergraduate students have to select a dissertation project topic and a dissertation project supervisor. Within the School of Computer Science, academics release a list of topics and projects they are willing to supervise (usually based on their research expertise) and students with interests in those areas, select the projects. However, for several years now this has been met with frustration, dissatisfaction and disquiet from a large number of students. Shortly after the student-supervisor-topic allocation, students complete the NSS.

As a result of this, the paper presented here, looks to gamerficate the process of student-supervisor project allocations with the aim of managing student satisfaction and expectations.

2 METHODOLOGIES OF THE PAST

The problem of Student-Supervisor project allocation is not one that is unique to the University of Lincoln, indeed it is a problem faced by institutions around the world, and a quick Google search on “Student supervisor project allocation problem” will yield a large number of hits (1,690,000 in this case, although these haven’t been verified for relevance or validity). However, the first link takes us to an interesting paper by Abraham et al [4]. Here they present two algorithms for addressing the same problem.
problem, they have a large number of students wishing to take a smaller number of project topics. They also note, ‘Students have preferences over projects, whilst lecturers have preferences over students’, which is a common theme in many institutions. The solution provided by [4] is to use Linear-Time algorithms and mathematics to address to problem, this is a similar technique used by many other institutions and one the University of Lincoln has attempted.

However, these approaches are limited in that they still face the same problem, the student’s perception of ‘fairness’. We discuss this is more detail later in this paper.

2.1 First-Come, First-Served

An initial approached used by the School of Computer Science at Lincoln was to employ the first-come, first-served approach. This required students to be proactive in approaching a supervisor to discuss potential projects and agree on supervision. This initially worked well when student numbers in the School were relatively low, but as numbers grew, this became more problematic.

The advantage to this method is that student and supervisor could discuss a project and discuss skills and mutually agree a supervision. However, as academic supervision numbers is limited, an amount of game playing began. Anecdotally, academic staff would put students ‘on-ice’ and wait for a better offer before making a decision, this could be problematic if a student who was early and proactive then lost out to another student who was more ‘desirable’. This would then result in low student satisfaction and ultimately be expressed in any module (or national) surveys the students completed.

2.2 One-from-five

To improve on this process, it was decided that student and supervisor would not have the final say in who they would be supervised by or who they would supervise but rather the same initial process would continue, whereby students could chat with potential supervisors regarding projects and topics, but then they would select five supervisors, ranked in order of preference, they wished to be supervised by.

Initial discussion around this process were positive, as it would appear that students would make 5 selections of supervisor (no duplicates) that they were happy to be supervised by. This would, as it was intended, shift the levels of satisfaction, after all if a student was allocated to their 3rd choice, it was still one of their preferences and a choice they made.

However, this process had two drawbacks, the first was the cost of working through the selection forms and matching students with supervisor, this took four (and at times six) academics an entire day to process. The bigger problem with this method was in the selection and distribution density of the student selections. At time of running this method the Staff n=25, Student n=183. However, over 85% of the student population selected just 9 academics as their five choices. To the point where one academic had over 30 students select them as 1st choice for supervisor, and over 55 students select that academic as one of their 5 choices.

Workload allocations meant that on average and academic could supervise up to a maximum of 8 students. Unfortunately, this left a very large number of students (more than half) without any of their choices for supervisor.

2.3 Pick an Algorithm

The next method attempted was to follow what a large number of other institutions, and the literature was telling us. It was time to let a computer and some mathematics take care of the problem. We attempted to implement the algorithm proposed by [5] which looked at the problem as an NP-hardness complexity issue.

This method worked in the outset as a mechanism for matching students to supervisors, but again we experienced a number of issues with this method. The algorithm required a large number of preferences that had to used for the deterministic nature of the process, including resource allocations and if a project was specifically only capable of being supported by one supervisor in the department.

In respect of the function of the algorithm, this worked well, and all students were assigned to a supervisor; however, it was not without its problems. As resources on certain (more popular) projects were limited, and these were selected by a high number of students, we had a number of students not getting the project they wanted, and again, this led to poor satisfaction.
3 METHODOLOGY

These processes over the past 4+ years of attempting student-supervisor project allocations have drawn to an interesting conclusion. The process of pairing student-supervisor has been largely around providing the student with all available options to select from, then determining the outcome in a one-shot process behind ‘closed door’, this gives the student the perception that a) they are not in control of their allocation / selection process and b) that it’s an unfair process if they aren’t matched to one of their choices, when another student was.

Therefore, presented in this paper is a system designed to ‘change the perception’ of the student, via gamification through an online app. Dating your supervisor is an app that allows students to be in [perceived] control of their own supervisor allocation process. Hopefully, thereby increasing student satisfaction for the module at a critical time for the School and Institution.

3.1 Dating your Supervisor: Tinder

The application we have developed is based on the very popular dating app, Tinder [6]. Tinder is an online app that matches couples based on their physical attraction to one another. Clearly, this is an inappropriate, and certainly not a pedagogical way to allocate students and supervisors. However, the app works by showing the user a list of potential ‘suitors’ one by one, that the user can choose to discard (swipe left) or show interest (swipe right).

The idea behind using this approach for supervisor allocation is that the system will pair students to supervisors based on a number of defined metrics (rather than romantic preferences) and vice versa, show supervisors a list of students based on defined preferences (attendance, attainment, modules taken, interests, etc).

3.2 Gamification – Top Trumps

As previously mentioned, rather than using romantic or dating preferences for pairings, the system looks at defined academic metrics. This is viewed in a similar way to Top Trumps. Figure 1 shows the original popular Star Wars Top Trumps playing cards, Boba Fett and Han Solo.

On these cards there are categories that you can use to match up and determine the more ‘powerful’ card for the selected category.

![Figure 1 – Example Top Trump game showing two characters from Star Wars.](image)

The app developed for project allocations is gamified in a similar way. We take each of the academics and provide a number of categories by which the student can ‘swipe right’ to select a preference. Conversely, we have a number of categories for student profiles also, by which the
supervisor can ‘swipe right’ to select a preference. Figure 2 shows the prototype application with some of the student profiles. Figure 3 shows the swiping action of the app.

**Supervisor Categories include:**

- **Special Power:** This is their main research area / topic
- **Backup Power:** A secondary research area
- **Life Span:** Number of years as an academic
- **Faction:** Research Centre affiliation
- **Projects:** A link to a number of project topics proposed

**Student Categories include:**

- **Special Power:** This is the student’s main area of interest
- **Options:** The modules the student has select as a 3rd year option
- **Strength:** Attendance Profile
- **Profile:** A description of the student (personal statement)

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**Figure 2 – Student profiles on the Date your Supervisor app.**
3.3 How does this change student perceptions?

The research question being asked is:

‘Can the use of a social media ‘tinder’ style app be used to improve the efficiency and satisfaction of a student-supervisor allocation process?’

As discussed in section 2, the previous allocations processes have always met with student dissatisfaction, students make a selection, and their selection (or any variant of) is not ultimately provided to the majority of students, with the process occurring behind closed doors.

The hope with this system is that students will be given the same opportunities to select supervisors as any other student, once a student has ‘swiped right’ on a supervisor and this has been reciprocated, then the student is automatically removed from the list. Once a supervisor has their full allocation then they too are removed from the list. This means that students are only able to select a supervisor, if that supervisor still has available allocations, resulting in a much more transparent and ‘real-time’ allocation process.

Supervisors are only able to select students in the available list, encouraging them to be responsive and act quickly. The perception change on behalf of the students comes from the fact that it is them who are selecting supervisors from the available pool and thus their perception is it is they who selected the supervisor rather than being given that supervisor as a result of not getting one of their choice by some obscure and hidden process. This also has the added advantage that it reduces the time and overhead of the actual student-supervisor allocation process whilst making it engaging and fun, allowing all supervisors to explore the student profiles and interests and get to know the students that little bit better.

REFERENCES


