Placement Journal

A Journal of my time working for Numeration over the Summer Break

# Overview

Over the course of the summer, working in a group with 2 other students, I undertook a work placement with a small start-up in Truro, called Numeration. The goal of this placement was to produce a user driven application designed to optimise healthcare delivery at a clinical level with a focus on what we called ‘The Triple Bottom Line’, corresponding to cost, patient access and carbon footprint. This was primarily achieved by modelling the effects of implementing a social prescribing initiative, optimising staff rostering, and considering different energy saving technologies.

Due to the open endlessness of this placement, and large stints of time where we were working individually, the work was completed at both the university and at home. We aimed to meet weekly to discuss our ideas and to share progress but at times when this was not possible we relied on various technologies, such as video conferencing services and instant messaging platforms, to communicate with each other.

Initially we set a rough timeframe of around 6-8 weeks to complete this placement and to produce a useable program, this was quickly repudiated due to our inability to get a working product out and then a series of holiday and breaks from the project only served to lengthen the project even more. Upon reflection, it was our failure to set a concrete finish date that was the main contributor to us not completing the project on time. At the time of writing, well into the start of October, the program is only just nearing completion.

# Interview Process

I first began the process of looking for placement positions by searching online for ideas on the field that I should pursue. Unable to make a clear cut decision of what fields I wanted to pursue, I was split between some kind of data analytics position or marine engineering. With initially little success finding desirable positions (Admittedly I think some of this lack of success could be attributed to being overly picky and idealistic on what role I wanted), I figured it was time to cast my net wider and pursue other methods to find placements.

After consulting with a family member, I was set up with a tour around a small local firm, called ‘ASV’ which specialised in marine autonomous surface vehicles. The purpose of this tour was to network, learn about the industry and hopefully lay the foundations for some kind of potential work down the line. After an honest discussion and tour of the production and design facilities, I was told that they didn’t have the resources for an intern this year but to try again next year. Not completely sure if this was just a polite dismissal of my skillset or down to a genuine resource deficiency, I still intend to chase this up in the coming year.

With the procession of more rejections and time running out until the beginning of summer, it was time to get more creative with finding potential positions. So after sending emails to the majority of my professional contact list, I finally hit a stroke of luck with one of my lecturers who sent me the details of my soon to be placement supervisor. After researching the role being advertised, I set about tailoring my CV to the specifications of the role. Despite having no previous professional work experience, I had the good fortune that a lot of the desirable skills were things that had been covered in university modules. Examples of these skills being R programming and statistical confidence, all being covered in several modules in both 1st and 2nd year. I heard back relatively quickly from my placement supervisor and after a brief telephone conversation were he set out his goals and ambitions for the project, I was invited along to the 1st meeting.

On a side note, it also worth mentioning the issue that I had with funding. Due to the small size of numeration, they were unable to offer me any kind of financial reimbursement and this in combination with the fact I was required to live away from home, were I was solely responsible for the cost of my living, and meant that I had to acquire additional employment working in a kitchen at Maenporth. It would be fair to say it was a busy summer.

# Week 1

The first week we set about introducing ourselves in an informal meeting, in which we were introduced to the core model, and set about assigning roles for the placement. It was decided that myself and Alex would work on the back end of the program, whilst Rowena, in parallel, would set about designing and building the front end of the program. This first meeting then culminated in a team building pint at the Stannary, and me challenging our supervisor to a game of pool (I Lost).

The rest of this week consisted of familiarizing ourselves with Numerations model, which manifested itself, at that time, as an intricate 6 pages excel spreadsheet interwoven by a seemingly endless amount of complicated conditional equations. The problem that we faced was making sense of this web of equations and then proceeding to translate this into a simple program that a user could understand. Our supervisor remained on hand if we needed assistance but unfortunately, as with most mathematical model, it is difficult to truly comprehend a model until it has been unpicked and dissected to its most basic layers. To aid this process, we produced a flowchart of all the components of the model which not only assisted in the comprehension but also allowed us to allocate tasks efficiently as we knew exactly how everything tied together.

# Week 2

Once we had reached a stage where we were comfortable with the model, we began to allocate to programming tasks amongst are groups and set up an online GitHub repository. The purpose of the Github was to allow all members of the group to work on up to date copies of the R-scripts in a fashion that minimised the chance of one alteration to the code causing the rest of the code to stop running. What’s more, another tool that we discovered that further streamlined workflow was that R-studio allows for inbuilt integration with Git thus allowing the entire R project to be push and pulled, from the repo, direct to the workspace. This served to be a crucial tool for the project and without it, working on the same code in parallel would have been near on impossible.

The rest of week 2 consisted of beginning to program the model and create a framework for the back end.

# Week 3

Around this point, the project began to achieve momentum and we shifted from more a more team focused effort, based around planning and researching, and to being more individually focused with our individual aims being based around getting individual functions and scripts written. Upon reflection during this period we probably made to much of a shift away from working as a group, as at times I often isolated myself working on scripts with lack of awareness of how what I was producing could be best utilised and integrated within the project as whole. It is because of lack of this cohesion that I think our final user-program appears cluttered and is not computationally efficient as it could be.

# Week 4

Week 4 carried on much the same as week 3, and progress continued as slowly the framework of the backend of the model neared completion. It was at this stage that we were beginning to consider the end user of our product and how we might best design the front end to suit their needs. After several meetings with our supervisor, we decided on an all-encompassing audience with the same program being offered to high level managerial staff and on a lower level, such as individual GP’s. In hindsight, I think that not targeting our product at a specific audience only complicated design challenges and meant we were more focused on doing a lot of things poorly as opposed to doing just a couples of things to a high standard. Due to this reason, later on in the project we simplified our objective to just focusing on potential investors and for our program to serve as a proof of concept.

# Week 5-9

Over the middle of the summer there was extended period of time populated with various members taking holidays and carrying out other commitments. Due to this fact, work output was largely reduced and productivity not at optimal levels. It also resulted in problems regaining momentum, as the model no longer remained fresh in our minds.

# Week 10

By the time the entirety of the team was back, the back end was largely completed, and it was time to consider how best to tie the front end to the back end. Amongst this, we also had several other discussions with issues of how best to maximise usability for the user raising issues such as how best to read in the input data? Exactly what outputs would be useful/relevant? In what ways could we visually communicate this model, to the mathematically non-inclined?

# Week 11

As the project was coming to the end, my and Alex’s role turned into a more supportive role providing Roweena with the specific outputs that she required. It was also at this time that we were introduced to the CEO of Numeration, Stephen Sherratt, via video link where we discussed our current progress and what he would like to see from our user interface (It was at this point where we narrowed our target audience down to just potential investors).

# Week 12 – Onwards

At time of writing, we have produced both working front ends and back ends although admittedly have had some issues tying them together. The plan is in the immediate future for the team to commit a weekend to the completion of the work and bring both sub-projects in to one. Going forward there has been discussions, of us staying involved with the project and I am keen for my relationship with Numeration to continue well into future, at whatever capacity I can.

# Final Evaluation

Overall, I have thoroughly enjoyed my time working with Numeration and in the development of their model although, with hindsight, there are a lot of things that I would have done differently; I think the end product is something I can be proud of. In order for this to be the fullest learning experience possible, I think it is important to address directly the major problems I have identified and some of our strengths (Although most of these have been discussed over the course of the Journal).

I think one of the major takeaways from this placement, will be that when starting a project, it is important to go in with a clear vision for the end goal and what exactly the purpose the end-product stands to serve. It seems to me a lot of time in the placement could have been better spent if we had set ourselves clearer goals and deadlines. It was only towards the end, when we finally decided on a audience, did our work finally start to take shape,

Another way in which productivity could have increased was by the better use of communication. I think one of our major down falls on this project was agreeing to work from home on certain days. Without being physically in the same place it made it very difficult to communicate and share ideas with each other quickly and found this reduced the sense of cohesion amongst the team. For example, I personally found it very difficult to explain the intricacies of some of my code, over a video link as I was unable able to quickly point out lines.

I think one of my major skills I’ve learnt from this project is using the Github online repository to streamline workflow on a coding project and I fully expect that this is a skill that I will take with me into the professional world.

I hope, looking into the future, that I will be able to learn from these downfalls and that I will strive to further bolster my strengths. I look forward to, hopefully, continuing to assist Numeration on this project and hope going forward into my future that my new skills, and contacts, will aid me in making a mark in whatever profession I eventually choose to pursue.