

P4 Personal Reflection David den Ouden

The choice of which thesis to take on is, next to choosing the master, the most important choice in your academic career, and just like with the choice for my master, I was guided by snips of similar approaches and topics that had interested me before. For my thesis, this interest was the programming in Python which we learned in the last course before the thesis, which is very directly connected with the chair of design informatics within my master. Not a very rational choice, but together with an big opportunity handed to me by my work's supervisor the choice was an easy one. Combining the programming skills and architectural design together with a useful research and possibly a tool for society was a big motivator.

The methodology for completing the thesis was to find a nice balance between research and design, where both were equally important and should enhance each other. The idea was to start with research and base my design on this research, and evaluating the results by feeding this back to the research. Furthermore, the research consisted of getting acquainted with several fields like graph theory, operations research, optimization techniques and the facility layout problem, as well as reading and researching previous methods by other authors. Finally, this would result in enough knowledge to come up with three methods of my own, after which they would be compared and the best one would be further worked out. This approach, as pointed out by my mentors, however, proved difficult because of the lack of criteria to test the methods on: Would said methods actually work in my specific case?. This is why, after the p2, more research was added in the shape of analysing an existing food factory's layout to determine what criteria a method would need to be able to satisfy. These criteria were found and they were used to determine if the found methods in the literature scored good on these criteria. This led to a much easier understanding of which methods would work in certain areas and which wouldn't. With that information, it became much easier to formulate a method of my own (just one to preserve time) and start designing, while referring back to the literature along the way.

The scientific relevance of my work becomes very apparent when one considers the heavy amount that my own methods are inspired by, and quantifiably based on, the methods that are presented through the past 50 years of literature about the facility layout problem. Every step along the way is based on evidence discovered by an author in the past. However, this does not mean that my thesis is a mere summary of what has been discovered so far. In the contrary, it is a means of learning what has been done, and then, through a careful approach, extend the knowledge and try to improve in certain fields.

This thesis also extends outside of the academic world, and is very much attached to real problems that are present in society as of now. The collaboration with the corporation DAPP provides this connection to society, proving me with information that is not necessarily academic, but nevertheless very much needed. They also believe that the end product of this thesis is a nice first step towards developing a tool to solve these real world problems, namely, the impracticality of manually designing factory layouts, while a computer's power would greatly improve this process in many ways.

So far, the process has been going quite smooth and according to the long term planning, which is not something that I will strictly uphold, but helps me as a reminder of where in the process I should be at which moment. The first minor setback was the disappointing P2, where I got the just feedback that I did not have real conclusions yet. Instead of disagreeing, I open-mindedly embraced the feedback and started working to process this feedback and let it help me achieve better results, which it did. The second minor setback was the coronavirus outbreak in march, where we were forced to work from home. A setback because there were plans for students with similar topics to collaborate and help each other out. I suspect that I will be able to fulfil the rest of thesis from the safety of my home, though. No real challenges except the presentations are presented by starting to work from home.

At the time of writing this, the P4 is almost at hand, and the thesis has advanced to a state where reflection upon the results is possible. So an interesting question is: "did my approach work"? While it is clear why I chose to go for the approach, namely to reduce the solution space by splitting the approach into two parts, it is as of the P4 still unclear whether the approach really worked. The approach behaves as it should behave, but the results are still up to debate on whether they support the statement that the approach worked. I am hoping to win this debate in my favour in the last few weeks of this graduation, certainly by paying very close attention to the feedback I am about to receive at the P4. The last few weeks will also be filled in by tweaking certain passages and making the entire thesis more coherent, like cross-referencing between chapters and sections

more often. The fact that I have learned a lot from this thesis is independent on whether I pass or not, as at the current stage I became more proficient in python then I'd ever thought I could be. Also, the skill to write academically has been refreshed and updated as well, being able to reference in a good way, look at previous results and evaluate them critically and overall being true to the academic way of going about a thesis.