Geometry matching by multi-agent systems

Changing GFRP from an environmental hazard to a façade design solution

Reflection

4109333

Members of graduation committee:

M. Turrin - First Mentor
Architectural Engineering + Technology & Design Informatics

M. Bilow - Second Mentor
Architectural Engineering + Technology & Product Development

T. Jylhä - External Examinor

Relationship between the theme of the graduation lab and the research project

The building technology master track attempts to provide solutions that reside between architectural design and engineering. Within this research that is done by using computational design to tackle a design problem that concerns the geometric aspect of design. The developed computational design process provides a solution that attempts to combat an environmental problem within the Netherlands. The output of it has a goal of minimising the deviation of the intended panels and thereby increasing the surface continuity of the overall output the algorithm generates. Aesthetic quality has not been a focus of this research, therefor the focus has been predetermined to optimise towards a surface that is as continuous as possible. Other aesthetic preferences are certainly possible with this workflow if the right adaptations are made.

At the start of my graduation process, a list of possible graduation topics was provided from which a choice could be made. At that moment I decided not to pick a topic of that list, but to define my own. This approach was a challenge as it included the convergence to an exact project definition, which proved to be a challenge. This is partly caused by the difficulty of the decision-making process and partly due to personal circumstances. It did, however, allow me to have to opportunity to develop my own ideas into a graduation project.

Societal impact of the research

The result of this research can be seen as a theoretical starting point towards applying the workflow presented in practice. The main focus of the research could be used as is, an algorithm that provides information on what to do in practice. From a broader point of

view, a large range of other parts that contribute to the practical implementation of such a workflow how to be considered and further researched. Nevertheless, the goal was to match surfaces in order to tackle an environmental issue, which is achieved. This is certainly no definite solution to the environmental issue this research describes, but it does however, give a direction and it begins to display signs of future potential for the re-use of materials such as glass fibre-reinforced polymers in an architectural application. In my mind, the impact and relevance of this research on sustainability, in the state it is now, is more about making people aware about what the environmental issues the building industry faces rather then really solving a part of this problem. Only when the objective of this research is applied in practice, it might prove to be more then awareness, but for now that is the main goal.