# DIGITAL MANUFACTURING OF REINFORCEMENT SYSTEM IN A FREEFORM CONCRETE STRUCTURE

## REFLECTION


PERSONAL INFORMATION

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STUDIO

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TITLE OF THE GRADUATION

Digital manufacturing of reinforcement system in a freeform concrete structure

## REFLECTION

My graduation topic was initially started with “AM additive manufacturing of concrete”. Between the P1 and the P2period this topic went through some changes. In the initial research phase, I looked for the available resources in this field and I found plenty of them. This was a really trending topic and most of the possible themes for this topic, had already been investigated. I couldn’t find a path for myself to choose a theme in this topic and be innovative and original. I could only re investigate, the already explored topic.

What a waste of time!!! . A topic that could that could be done only by rephrasing the existing reports and some minor personal inputs.

In the second attempt, I told myself lets choose a complex building and try to construct it using this methodology. Which building should it be? A building that does not have a cubic shape and its construction process can use the help of AM technology. We can agree that thinking about Sagrada Familia church in Barcelona is not something crazy. This building is under construction for ages and it is not been completed yet. It seems to be a good path for my graduation.

After a brief study, I realized some digital manufacturing techniques have been already used in this building. When I was looking through this church construction pictures, one of them caught my attention. A complex building part, which its formworks were digitally manufactured. However, that part had to be reinforced. Due to the shape complexity, generating its reinforcement structure seemed to be also another challenging task.

That triggered this question in my mind. Why no one is paying attention manufacturing of these elements? There for I decided to investigate this aspect of digital manufacturing of concrete and I changed my topic to **"Digital manufacturing of reinforcement in freeform concrete structure".**

As a building technology and TU Delft master student, it is always important for us to be innovative in our projects. This theme could fulfill that ambition for me. A topic, which as far as I know haven't been studied by any other researchers. This topic, also fit partially in the boundaries of what I have learned during the building technology track; architectural, structural and computational design.

Of course I don't have the same background as a civil engineer. But for an architect and a structural designer, I have a good understanding and insight for this type of themes. It seems to be a big goal and I might not be able to accomplish it fully. By choosing this topic, I made conscious decision.

The outcome of this research will be more conceptual than a definitive design. My intention for this project is to develop a new digitally manufactured reinforcement systems that can be used for freeform concrete structures. Additionally this report can also be used by other researchers for further development. For that reason I tried to show my process as much as I could. It should be like a book that its future readers, can also have their own interpretation of it. And each one of these interpretation can give a possibility for development of another new reinforcement system.