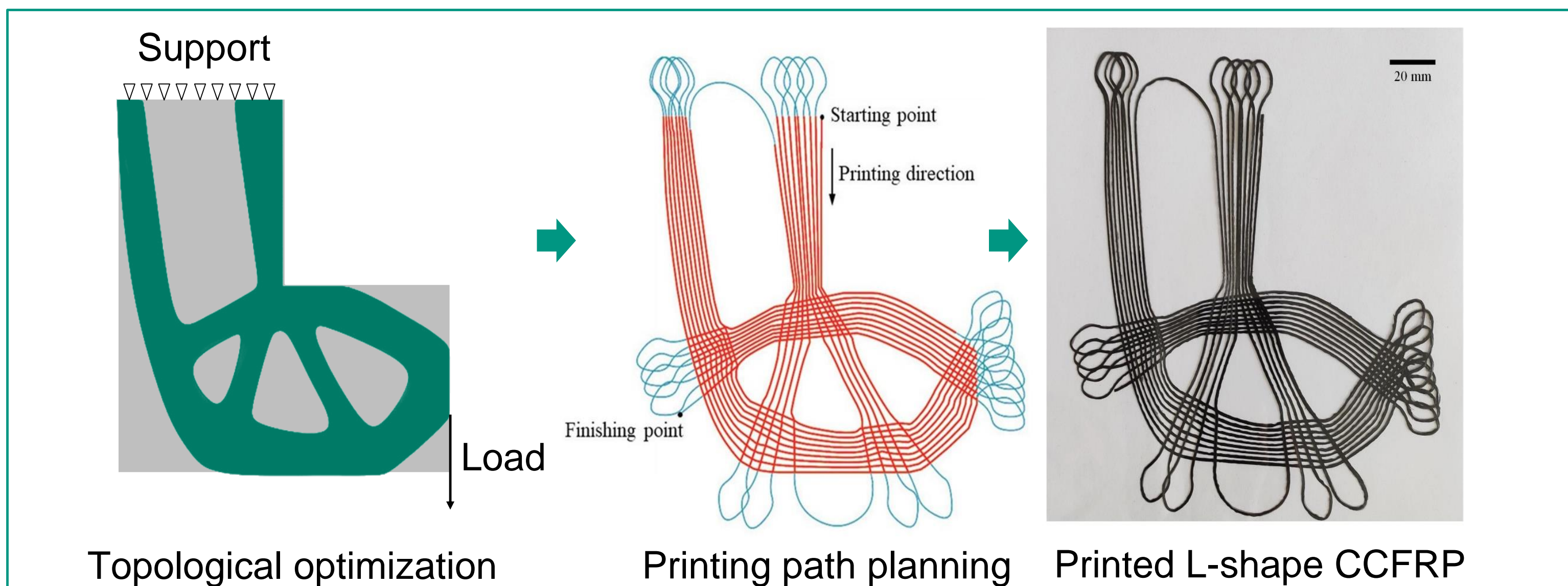


Masterarbeit

3D Printing Path Planning of Continuous Carbon Fiber Reinforced Plastic Structures



Motivation:

Today, continuous carbon fiber reinforced plastic (CCFRP) structures are widely used in automobile and aircraft industries, because of their higher strength to weight ratio and longer service periods compared to structures made of metal. A prominent example is the Airbus 350XWB aircraft that consist of 52 wt.% composites in the frame structures. 3D printing through fused filament fabrication (known as additive manufacturing), is an emerging method for producing such structures and faces growing interest in the manufacturing industry. However, the current challenge is to figure out how to design the layer-wise printing paths for the CCFRP.

Contents:

- The first version of the path planning algorithm (MatLab code) is developed and the candidate should understand the path planning procedure for continuous carbon fibers
- Based on the MatLab code, develop a GUI interface for setting up parameters and monitoring variables
- Tune the parameters of the path planning algorithm automatically by programming and find the optimized parameters

Requirements: Mechanical engineering, mathematics, computer science or comparable

Type of work: Analytics, Programming

Prerequisites:

- Motivation and interest in the area of 3D printing, and programming
- Independent and structured way of working
- Previous knowledge of the MatLab or Python programming language is an advantage

Start time: now

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