

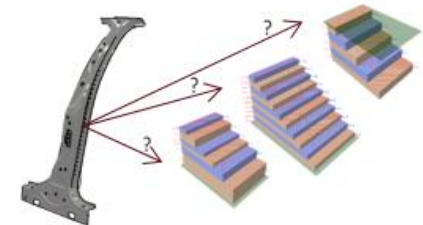
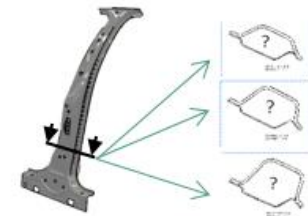
Evolutionary algorithms in structural optimization

Automotive industry in recent years shown a great desire to reduce vehicle weight, as it plays an important role in reducing fuel consumption, thus reducing environmental pollution. One of the most efficient methods for weight reduction of sheet metal parts in the vehicle body is the replacement of conventional material like steel with Polymer-based composites which have a higher strength to weight ratio. There are many input parameters such as geometric dimensions and mechanical properties of materials used to realize demands and expectations of a structure. Structural optimization techniques make possibility to provide the best combination of the input parameters in accordance with predetermined constraints and objectives for designers.

Main topics of the thesis:

- State-of-the-art using evolutionary algorithms methods in structural optimization. (Comparison of strength and weak points)
- Implementation of evolutionary algorithms in structural optimization.
- Validation of accuracy and comparing the performance of implemented algorithms with the result of similar studies in literatures.

Sufficient experience and knowledge in programing are expected.



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