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Support Structure Constrained Topology Optimization For Additive Manufacturing

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The Invention

Systems and methods for generating designs of objects for additive manufacturing (AM) include a topological optimization framework that facilitates optimized computer generated designs requiring significantly reduced support structures. Towards this end, the concept of 'support structure topological sensitivity' is introduced. This is combined with performance sensitivity to result in a TO framework that maximizes performance, subject to support structure constraints. The robustness and efficiency of the proposed method is demonstrated through numerical experiments, and validated through fused deposition modeling, a popular AM process.

Additional Information

For More Information About the Inventors
- Krishnan Suresh

Tech Fields
- Engineering : Additive manufacturing
- Information Technology : Computing methods, software & machine learning

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842