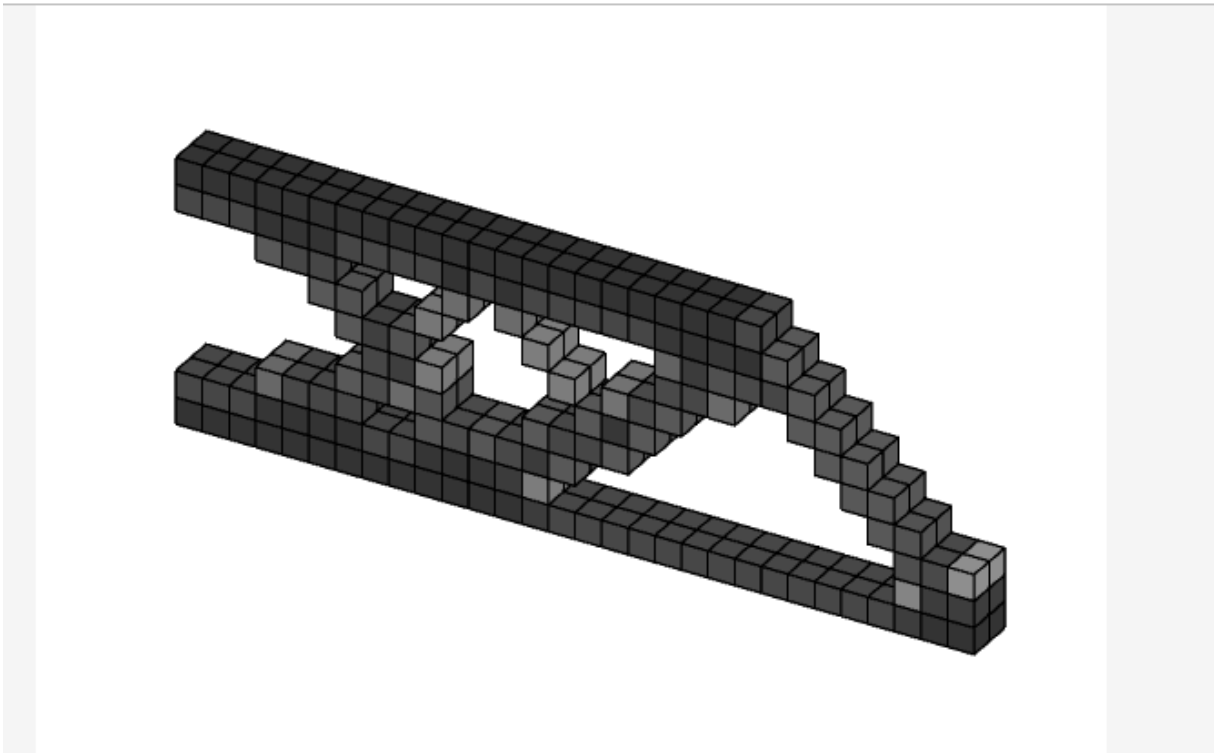
Ravi Teja Bollineni - 3D Topology Optimization Portfolio

Topology Optimization for 3D Structures Design with Results

This updated portfolio showcases simulation results and methodology applied in Ravi Teja Bollineni's case study on topology optimization of 3D structures using MATLAB. The results below demonstrate the evolution and effectiveness of optimized structures under various configurations.

Simulation Results

Result: top3d(30, 10, 2, 0.5, 3.0, 1.2)



Result: top3d(30, 15, 3, 0.5, 3.0, 3.2)

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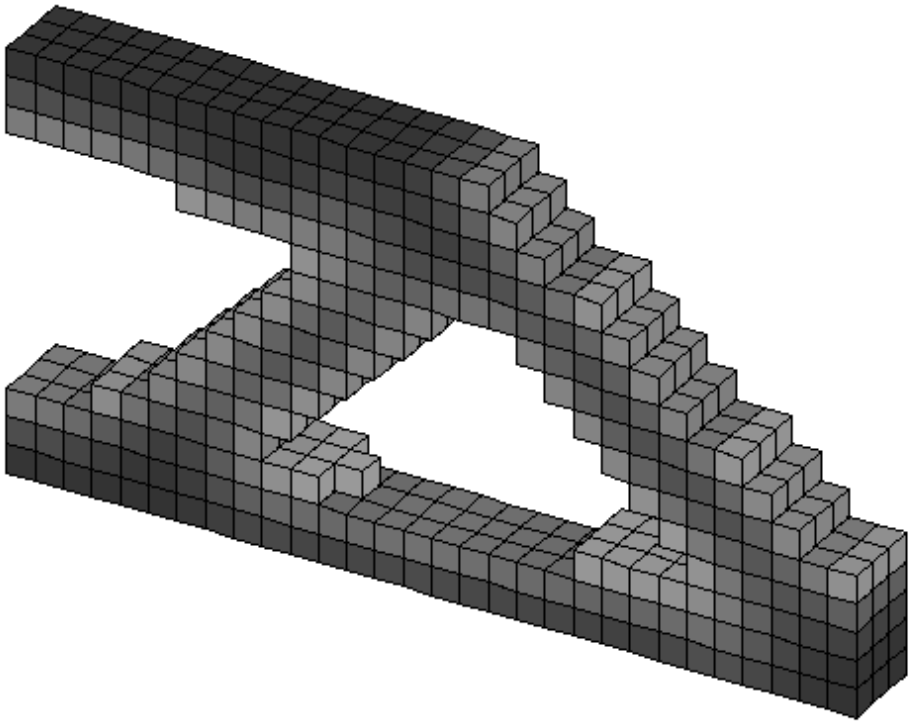

Result: top(30, 20, 5, 11, 8.0)

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Conclusion

The 3D topologies optimized in MATLAB using various filter and penalty values result in lightweight and structurally efficient models. The integration of active-passive element theory will drive future work, focusing on adaptive and dynamic system behavior in critical industries like biomedical and aerospace engineering.