In this study, geometric representation is achieved using surfaces controlled by a neural network, which are mapped to the density field in traditional density-based topology optimization through a mapping function. The primary contribution lies in controlling the Gaussian curvature of the surfaces to improve manufacturability via CNC machining. However, strictly zero-Gaussian-curvature surfaces may be overly restrictive. To address this, the study introduces seamlines that stitch developable surfaces together, allowing local curvature concentrations while preserving overall developability.

Overall, the proposed method is well-founded and reasonable. However, several aspects need further discussion:

1. The methodology is somewhat overly complex. The solution of the governing equations still relies on finite element analysis based on a voxelized mesh, which does not fully integrate with the neural network. Additionally, the model incorporates numerous Heaviside mappings, introducing significant nonlinearities that complicate the optimization process. As a result, extensive parameter tuning is required.

2. In CNC machining, tool shape and maximum cutting depth are critical factors. Since tool inaccessibility analysis in this work is based on the density field, there may be inconsistencies with the geometry represented by the neural network. How can this issue be resolved?

3. The number of implicit surfaces used to represent the geometry lacks a clear guideline. The paper briefly analyzes cases with three and four surfaces, but no explicit methodology is provided. Intuitively, the number of surfaces should correlate with the complexity of the desired topology. How should this selection be systematically determined?

4. A fundamental challenge in using neural networks for structural optimization is the difficulty of explicitly incorporating constraints. As in this study, all constraints are included in the objective function via weighted terms in the loss function. How are these weights determined? Are they fixed for different problems, or do they require case-specific adjustments?

5. Following the previous point, can a case with a very low volume fraction be provided to verify that all constraints remain satisfied?

6. Extending the previous point, can a case with a very low volume fraction and a significantly elongated Z-axis be tested to evaluate whether constraints are still satisfied under extreme conditions?

7. In the final machining time analysis, why does incorporating the cutter-surface alignment constraint lead to an increase in machining time?

8. Given the presence of highly nonlinear constraints in this study, how does the initial setting of neural network parameters affect the final results?