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Structure design and multi-objective optimization of a novel crash box based on biomimetic structure

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Highlights

- This paper introduces the structural bionics to the structure design of crash box.
- A novel crash box composed of concave shell and NPR structure inner core is proposed.
- In the paper, the human tibia is regarded as the bionic object of the new crash box.
- The functional gradient theory is applied to the design of the inner core.
- AMGA and NSGA-II algorithms are used to execute multi-objective optimization design.

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