

عنوان مقاله:

An Investigation into the Collapse Behavior of Double-Layer Space Trusses Using Neural Networks

محل انتشار:

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تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

The behavior of compression member within a double-layer space truss has a commanding influence on the overall behavior of the structure. Using finite element methods, a bar element, with a piecewise linearized axial stress-strain relationship has been used to represent the ideal behavior of each member in collapse analysis of the double layer space trusses. According to static collapse analysis of double-layer space trusses, three different collapse mechanisms will be possible, namely: overall collapse local collapse of the structure with dynamic snap-through, and local collapse of the structure without snap-through. In order to evaluate the collapse behavior of this type of structures, huge number of calculations must be done. To reduce the computational work in these problems, one of the best choices is the neural network. Radial Basis Function (RBF) and Generalized Regression (GR) neural network are frequently used function approximation in engineering problems. In this work, we have employed RBF and GR network for approximating the collapse behavior of double-layer space structures. Comparison of approximated result with exact collapse behavior of the structures. Indicates that neural network are powerful and efficient tools for .estimating the collapse behavior of double-layer space structure

کلمات کلیدی:

progressive collapse, buckling, nonlinear, gravitational loading, neural network radial basis function, generalized regression, approximation concepts

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