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Volume 50 of *Structures* (April 2023) is now available to read at **www.sciencedirect.com/journal/structures/vol/50**.

Mark Bradford, Associate Editor for *Structures*, has chosen as the Featured Article for this volume a paper investigating the axial load capacity of cold-formed lipped steel channel sections using a variety of machine learning methods.

The article will be available free of charge for six months.

Editor's Featured Article

Prediction of axial load capacity of cold formed lipped channel section using machine learning

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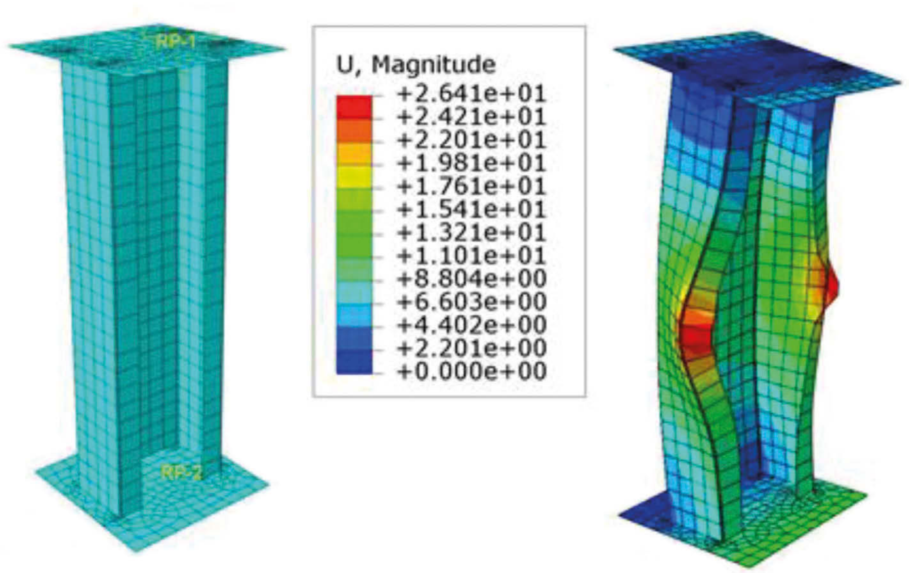
Cold-formed steel channel sections are widely used as both structural and non-structural members. The axial load carrying capacity of cold-formed steel sections depends on buckling modes such as local, distortional, global buckling, their interactions and geometrical imperfections. Although existing standards are adequate for determining axial load-carrying capacity, the present study proposes an alternative method based on recent machine learning algorithms. Experimental data pertaining to axial load tests conducted on cold-formed steel lipped channel sections are collected and modelled using the finite element method. Validated finite element models are used further to generate the input–output data set by sampling the input geometric and strength parameters of the section required for training machine learning models. Latest machine learning models, namely linear regression, lasso regression, k-nearest neighbours, decision tree, random forest, adaptive boost, extreme gradient boosting, light gradient boosting machine, categorical boosting, gradient boosting regression, support vector machine and artificial neural network, are used in this study to predict the axial load capacity. The random forest model is the best-performing algorithm for axial capacity prediction, with an accuracy of 99.10% for the test data set. Further, shapely additive explanations (SHAP) analysis is carried out to estimate the order of significance of the input variables and to justify the prediction of the best-performing machine learning model.

→| Read the full paper at **https://doi.org/10.1016/j.istruc.2023.02.102**



(a) Before bucking

(b) After bucking

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