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Prediction of stress distribution in plastic deformation of bending plate member using machine learning

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We establish procedure to predict stress distribution by machine learning focusing on the plastic deformation of bending plate member in press forming. Since the press forming is nonlinear elasto-plastic behavior, incremental analysis by implicit or explicit methods is generally used. On the other hand, a lot of data are indispensable upon building the machine learning model. Therefore, we adopt the one-step method, which can significantly reduce the calculation cost of respective finite element analysis. We validate prediction of stress distribution due to plastic deformation in plate member by machine learning in comparing the result of the finite element analysis.

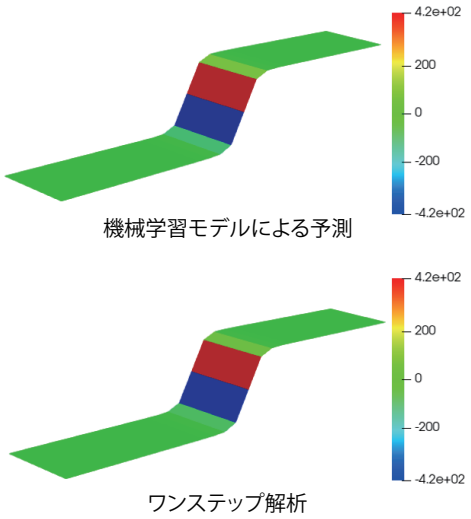

Fig.1: Prediction of stress distribution of bending plate member by machine learning