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Using Artificial Neural Networks for Estimation of Springback in Cold Roll Forming

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ABSTRACT

Cold roll forming is a sheet metal forming process in which the bending occurs gradually in several forming steps from an undeformed strip to a finished profile. Although simple appearance, the process is influenced by several parameters that complicate the process design and control such as springback.

The main purpose in this article is to determine a simple criterion for the springback and to introduce a fast solution to obtain it and therefore artificial neural network was proposed for achieving this goal. Cold roll forming of a channel section in the first station was simulated by a commercial package named "Msc Marc Mentat". The data obtained from the finite element simulations were used as training and testing sets for neural networks. Perfect performance of neural network was proved when the neural network outputs were compared with the testing set that did not exist in the training set.

KEYWORDS : Cold roll forming, Springback, Artificial neural networks, Finite element simulation.

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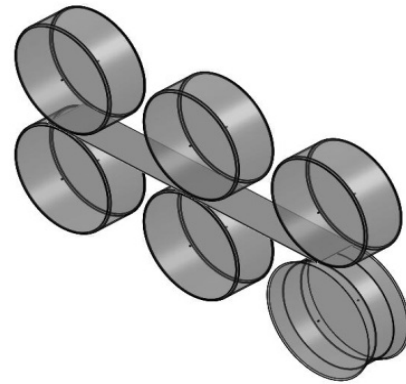
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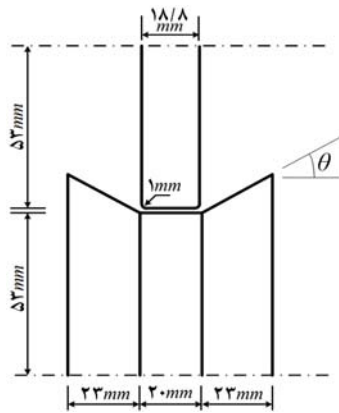
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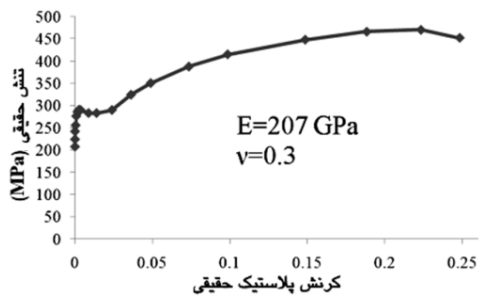
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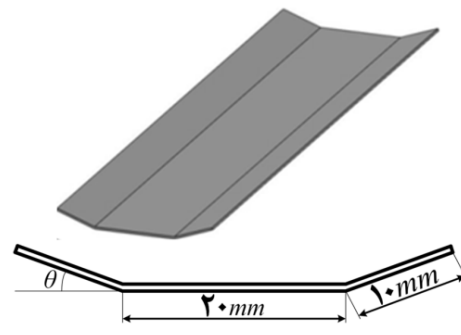
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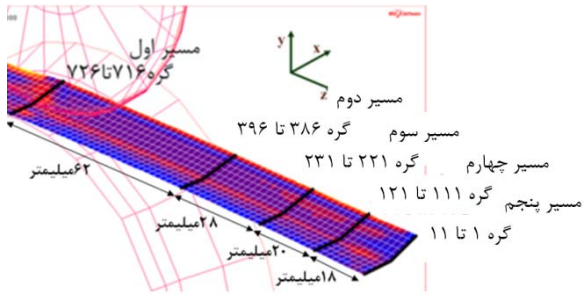


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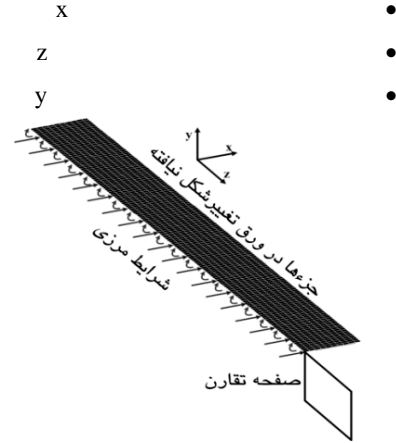
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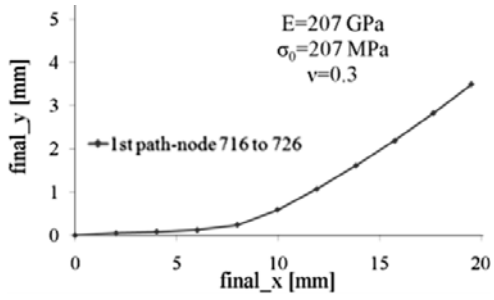
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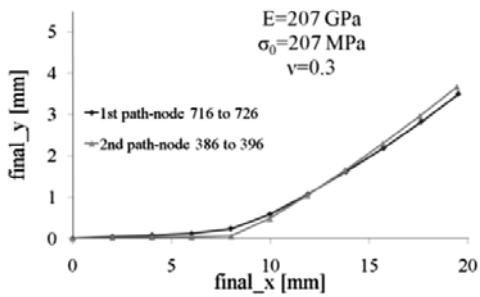
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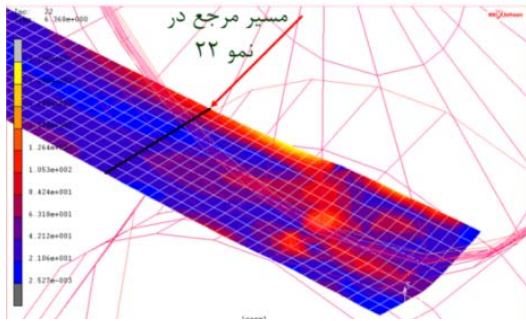
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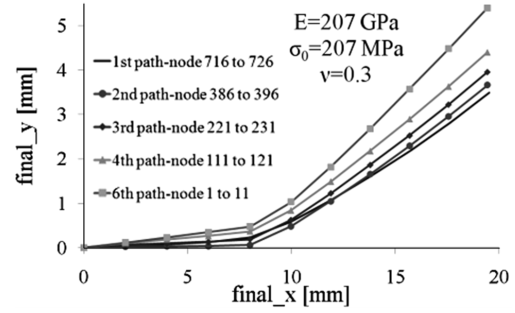
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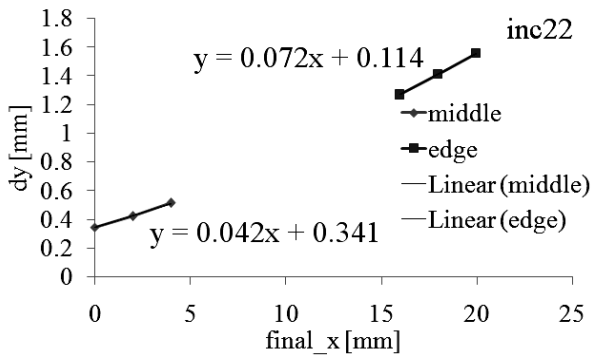
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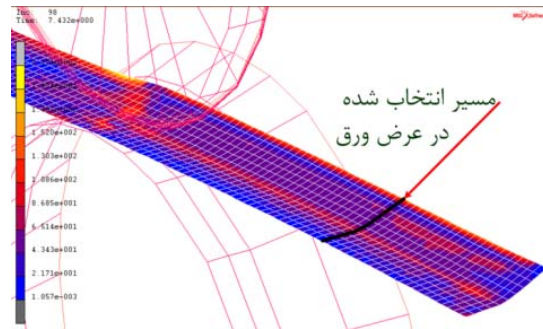
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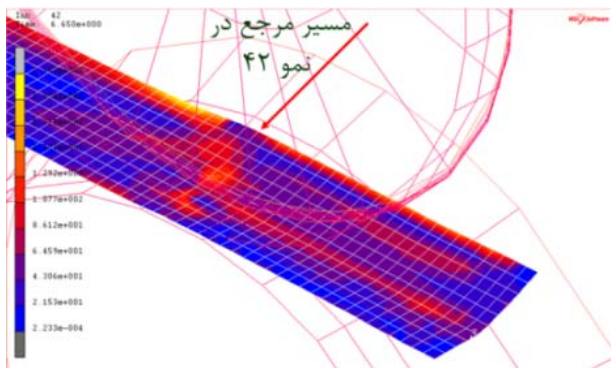
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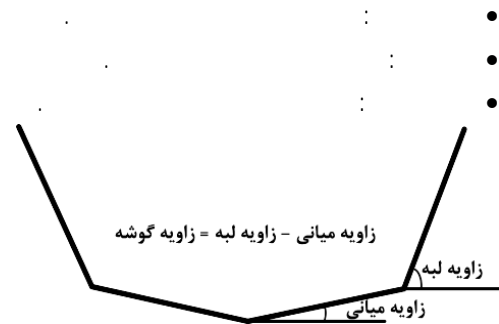


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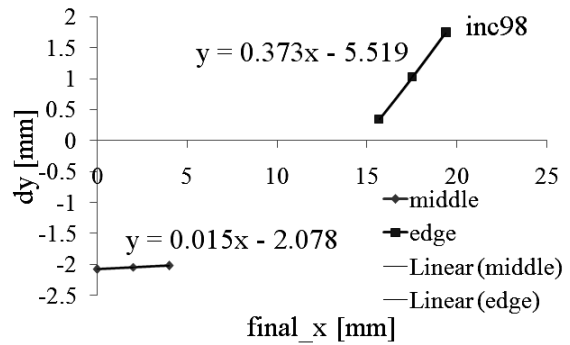
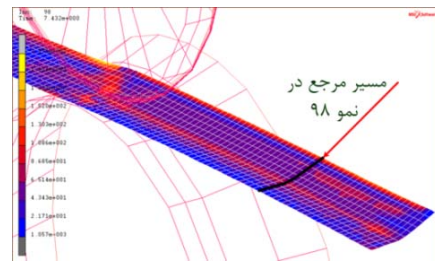
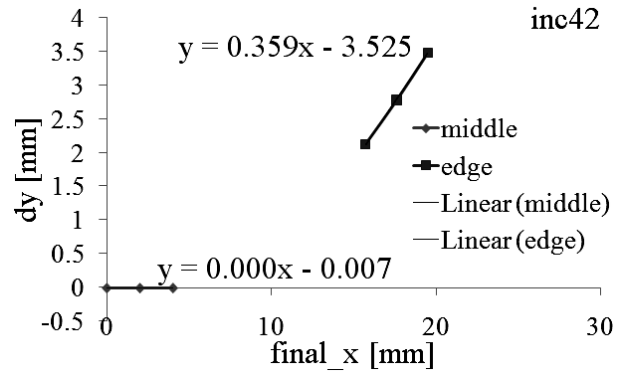
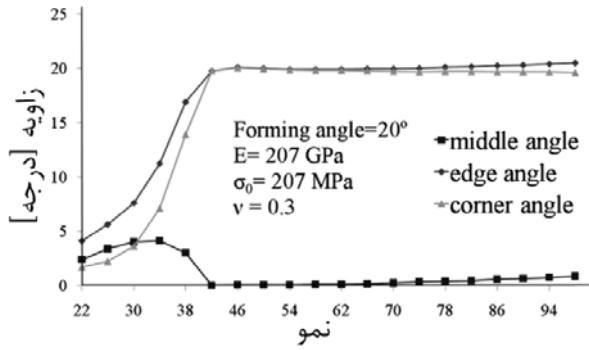
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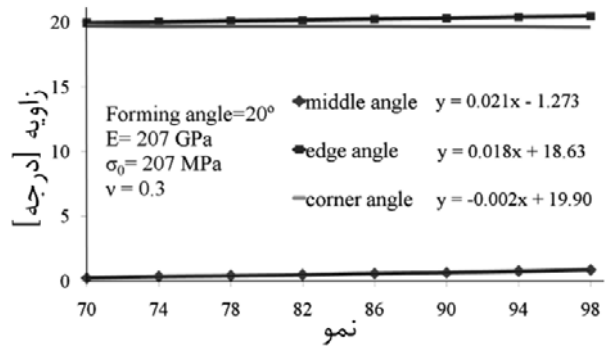
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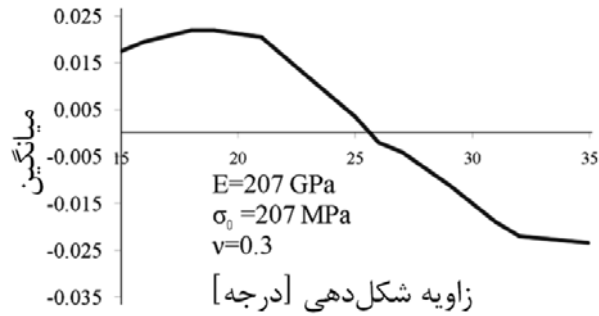
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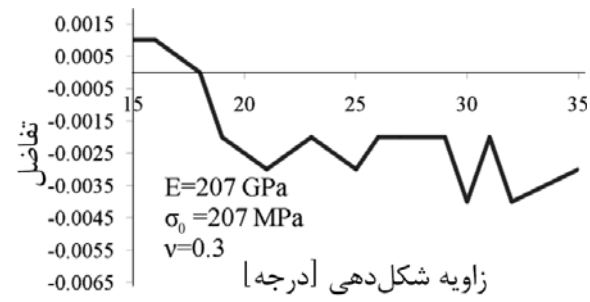
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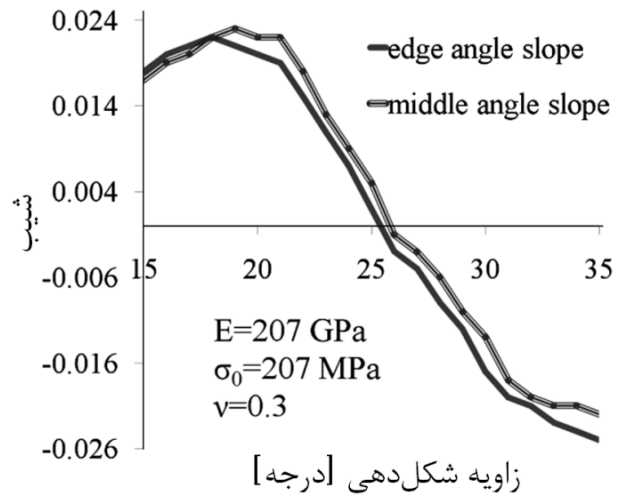


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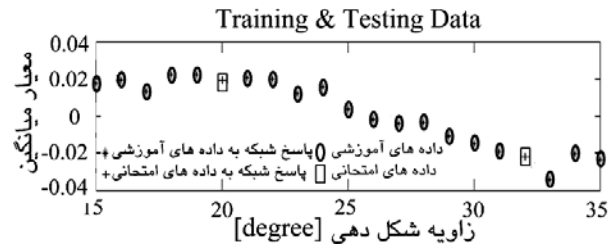
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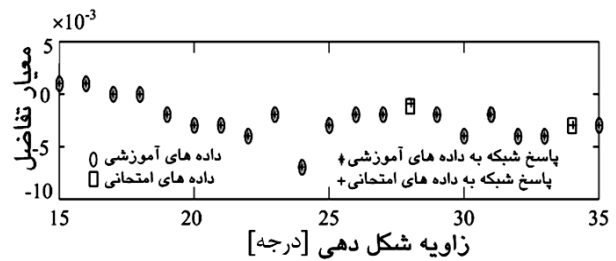
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- ¹ Marc-Mentat
 - ² Profil
 - ³ element
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