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Prediction of pressure field of incompressible flow using CNN

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Abstract

In Computational Fluid Dynamics (CFD), the physical quantities, velocity field and pressure field, are calculated for the next step using the physical quantities of the previous step. In this study, we propose to predict the pressure field of the next step from the velocity field of the next step and the current pressure field using a CNN (Convolutional Neural Network) like the SMAC method. We have also proposed a method to predict the next step from past steps using ConvLSTM (Convolutional LSTM). We will compare that method with our proposed method.

Keywords: CNN, ConvLSTM, SMAC