***ABSTRACT***

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| **Title of the Project :** | Reconstructing Perceived Images from Human Brain activities using Twin Deep Neural Network (TDNN) |
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**Abstract**

Neural Decoding plays an important role in understanding Human Visual System. The human visual system is naturally capable of extracting features from any object and comparing them. Most of the papers focus on either the brain activity pattern classiﬁcation or visual stimuli identiﬁcation. In this project, we introduce the Twin Deep Neural Network model for accurate reconstruction of images from human brain activity using Functional Magnetic Resonance Imaging (fMRI). TDNN method can be used for comparing the relationship between a sample pair of similar features for better visual reconstruction and make use of each sample completely. High dimensionality and a small quantity of FMRI data impose restrictions is reduced by using the TDNN approach. Essentially, this manner can increase the training data from N samples to 2N sample pairs, which takes full advantage of the limited quantity of training samples. We evaluated the proposed TDNN method on the open dataset of handwritten digital images and character datasets and exceeded about 10% of the accuracy of all existing state-of-the-art methods on the Convolutional Neural Network (CNN).