

# Handwritten Devanagari Character Recognition Using Layer-Wise Training of Deep Convolutional Neural Networks

<sup>1</sup>Mr. Abhishek Mehta, <sup>2</sup>Dr. Subhashchandra Desai, <sup>3</sup>Dr. Ashish Chaturvedi

<sup>1</sup>Research Scholar, Sabarmati University Formerly known as Calorx Teachers' University), Ahmedabad, Gujarat and Assistant Professor, Parul Institute of Computer Application, Parul University, Vadodara, Gujarat; [abhishek.mehta3094@gmail.com](mailto:abhishek.mehta3094@gmail.com)

<sup>2</sup>Director, Departments of Computer and Informative Science, Sabarmati University, Ahmadabad, Gujarat, India; [subhash1948@yahoo.com](mailto:subhash1948@yahoo.com)

<sup>3</sup>Registrar, Departments of Computer and Informative Science, Sabarmati University, Ahmadabad, Gujarat, India; [dr\\_ashysh@yahoo.com](mailto:dr_ashysh@yahoo.com)

## ABSTRACT

Manually written character acknowledgment is as of now getting the consideration of scientists in view of potential applications in helping innovation for dazzle and outwardly hindered clients, human–robot collaboration, programmed information passage for business reports, and so on. This study proposed a strategy to perceive transcribed Devanagari characters utilizing profound convolutional neural organizations (DCNN) which are one of the ongoing procedures embraced from the profound learning network. We tested the ISIDCHAR information base gave by (Information Sharing Index) ISI, Kolkata and V2DMDCHAR information base with six distinct structures of DCNN to assess the exhibition and furthermore research the utilization of six as of late created versatile inclination strategies. A layer-wise method of DCNN has been utilized that assisted with accomplishing the most noteworthy acknowledgment exactness and furthermore get a quicker union rate. The consequences of layer-wise-prepared DCNN are great in correlation with those accomplished by a shallow strategy of high quality highlights and standard DCNN.

*Keywords: handwritten character recognition; deep learning; Devanagari characters; convolutional neural network; adaptive gradient methods*