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Kannada Digit Recognition using Deep Learning

Shrisha H. S¹ and Saumya Y. M¹

Department of Computer Science and Engineering¹ St. Joseph Engineering College, Mangaluru, India shree.1259@gmail.com and saumya2087@gmail.com

Abstract: Kannada is a south Indian language with a history of two thousand years and spoken by more than sixty million people. Kannada language has its own script for alphabets and digit representations. So, there is a need for Convolution Neural Networks (CNN) model to recognize Kannada language scripts. Designing a CNN model to recognize Kannada digits can be challenging due to data overfitting. Data overfitting occurs when a trained model only classifies cases provided during training, leading to lower accuracy for new test instances. To address this issue, datasets are separated into training and testing sets. The disadvantage of this technique is the limited number of instances to train the CNN. While increasing the number of training examples is beneficial, it's important to address the difficulty of data collecting. This research examines the effectiveness of Generative Adversarial Network (GAN) as a data generator. The experiment found that data augmentation has a positive impact on CNN, GAN-generated data meets qualitative requirements for train and test datasets, and epoch value influences data underfitting and overfitting.

Keywords: Kannada language; Generative Adversarial Networks, Convolution Neural Networks, Accuracy

