

10<sup>th</sup> International Conference on DATA SCIENCE AND MACHINE LEARNING APPLICATIONS

August 08, 2022 | Webinar

**A Multilevel Transfer Learning and Feature Extraction Technique for Classifying and Annotating Limited Medical Datasets****Dr.R.V.Aswiga***Vellore Institute of Technology*

the attention of the medical community. Also, annotating medical images involving multiple organs is an even more challenging task. Therefore, any attempt towards such medical image annotation becomes the much need of the hour. In recent years, the rapid developments in deep learning approaches have made them an effective option for the interpretation of medical images and automatic report generation. But analysing medical images that are rare and limited is hard and it is difficult even with deep learning approaches as well. The concept of transfer learning can be employed in such applications that suffer from insufficient training data. This paper presents an approach to develop a Medical Image Captioning model along with feature extraction techniques based on a deep recurrent architecture that combines Multi Level Transfer Learning (MLTL) framework with a Long Short-Term-Memory (LSTM) model. A basic Multi-Level Transfer Learning (MLTL) framework with three models is designed to detect and classify very limited datasets, using the knowledge acquired from easily available datasets. The first model for the source domain uses the abundantly available non-medical images. The acquired knowledge is then transferred to the second model for the intermediate and auxiliary domain which is related to the target domain. which consists of medical datasets that are very rare and limited in nature. Therefore, the knowledge learned from abundantly available non medical source domain is transferred to improve the learning in the target domain that deals with medical images. Then, a novel Long Short-Term-Memory (LSTM) model, which is used for sequence generation and machine translation, is proposed to generate captions for the given medical image from the MLTL framework. Experimental results show that the proposed model performs well with an accuracy of 96.90%, with BLEU score of 76.9%, even with very limited datasets when compared to the work reported in literature.

**Biography**

Dr.R.V.Aswiga, currently working as Assistant Professor (Senior Grade) in VIT Chennai, Tamilnadu, India. She has more than 8 years of teaching experience. Recognized as best teacher consequently for 3 times. Active Reviewer in International Journal of Recent Trends in Engineering & Research. She is a recognized resource person in Anna University sponsored technical workshop. She has completed doctorate from College of Engineering, Guindy, Anna University, Chennai. She completed B.E Computer Science and Engineering from Erode Sengunthar Engineering College, Affiliated to Anna University and M.E Computer Science and Engineering from Angel College of Engineering and Technology, Affiliated to Anna University. She is a university rank holder in both UG and PG. Her research interest is machine learning and transfer learning. She is specialized in Big data Analytics, Machine Learning, Transfer Learning, Neural Networks, Object oriented programming, Image processing and Computer Architecture. She has published 40+ journals in various international journals and conferences. She has attended 40+ FDPs and organized more than 20 events. She was the best outgoing student during her post graduation.