

Department Of Computer Science  
Rollwala Computer Center, Gujarat University

**Expert Lecture on “A Deep Learning approach for tweet classification and rescue scheduling for effective disaster management”**

Department of Computer Science, Gujarat University had organized an expert session for students and teaching staff on 8<sup>th</sup> January, 2020. The invited expert guest lecture was conducted at the Seminar Hall of Department of Botany and Bioinformatics and Climate Change Management, Gujarat University. The topic of the lecture was “A Deep Learning approach for tweet classification and rescue scheduling for effective disaster management”. The session was conducted by Dr. Sanjay K Madria, Professor in the Department of Computer Science, Missouri University of Science and Technology, USA. He has won 5 IEEE best paper awards. Many renowned companies have funded his research projects. Dr. Sanjay was welcomed by Dr. Jyoti Pareek with a bouquet. Dr. Savita Gandhi welcomed him with a memento as a token of Appreciation.





Every activity in disaster management demands accurate and up-to-date information to allow a quick, easy, and cost-effective response to reduce the possible loss of lives and properties. It is a challenging and complex task to acquire information from different regions of a disaster affected area in a timely fashion. The extensive spread and reach of social media and networks such as Twitter allow people to share information in real-time. However, gathering of valuable information requires a series of operations such as (1) processing each tweet for the text classification, (2) possible location determination of people needing help based on tweets, and (3) priority calculations of rescue tasks based on the classification of tweets. These are three primary challenges in developing an effective rescue scheduling operation using social media data. In this talk, he discussed a deep learning model combining attention based Bi-directional Long Short-Term Memory (BLSTM) and Convolutional Neural Network (CNN) to classify the tweets. He also talked about performing feature engineering to create an auxiliary feature map which dramatically increases the model accuracy. In experiments using data from Hurricanes Harvey and Irma, it is observed that the proposed approach performs better compared to other classification methods based on Precision, Recall, F1-score, and Accuracy, and is highly effective to determine the priority of a tweet. Furthermore, to evaluate the effectiveness and robustness of the proposed classification model a merged dataset comprises of 4 different datasets from CrisisNLP and another 15 different disasters data from CrisisLex are used. Finally, He discussed an adaptive multi-task hybrid scheduling algorithm considering resource constraints to perform an effective rescue scheduling operation considering different rescue priorities



Different deep learning algorithms are applied on the manually annotated data. The algorithms proposed by them work perfect in the test data set as well. The provision of rescue teams can be done of FCFS (First Come First Served) basis, Priority basis or hybrid approach which covers both the approaches. The authors claim to achieve 88 % to 93% of accuracy.



The talk was then followed by the interactive session where all the students interacted with them and tried to solve their doubts and queries. Around 150 students from 4 courses (MCA, MSc, M.Tech and PGDCA) attended the lecture.



All students were benefited with the talk. They could get insight into the applications of AI in Real Life situations. Dr. Jyoti Pareek concluded the event with vote of thanks.