



Report

High-end workshop on Natural Language Processing using Deep Learning: Applications and Research

Directions

from

(18-25 July, 2022)

Sponsored by

Science and Engineering Research Board(SERB)

under

Accelerate Vigyan Scheme

Organized by

Department of Computer Science and Application

Atal Bihari Vajpayee University, Bilaspur, Chhattisgarh



Coordinator

Dr. Rashmi Gupta
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Atal Bihari Vajpayee University, Bilaspur (C.G.)

Acknowledgement

I would like to express our deep sense of gratitude to Prof. A.D.N. Bajpai, Hon'ble Vice-Chancellor, Atal Bihari Vajpayee University, Bilaspur for always encouraging us to organize such kinds of programmes. I am also thankful to Dr. Sudhir Sharma, Registrar, Atal Bihari Vajpayee University, Bilaspur, and Dr. H.S. Hota, Head, Department of Computer Science and Application for their administrative support and guidance during the faculty development programme. I would like to thank Science and Engineering Research Board (SERB) for providing the financial support to organize this workshop.

I also express my gratitude to the team of experts Dr. Abhishek Jain, IIIT Nagpur; Dr. Abhishek Kumar, Jain University, Dr. Rohit Raza, GGU Bilaspur; Prof. O.P. Vyas, IIIT Allahabad; Dr. Tirath Prasad Sahu, NIT Raipur; Dr. Rekhram Janghel, NIT Raipur; Dr. Alok Kumar Kushwaha, GGU Bilaspur; Dr. Saumajit Pramanik, IIT Bhilai; Dr. Manish Bajpai, IIITDM Jabalpur; Dr. S.K. Saritha, MANIT Bhopal and Mr. Nilesh Verma, Amlgo Labs, for giving their valuable time and imparting knowledge to the participants in the field of NLP. I am also thankful to our inhouse experts Dr. H.S. Hota and Mr. Jeetendra Kumar for giving lectures in the workshop.

I would also like to thank all the faculty members of the organizing committee Mr. Jeetendra Kumar, Ms. Shriya Sahu and Mr. Umesh Kashyap for their kind support throughout the programme. Last but not least I am also thankful to all the students for their active participation in the programme.

Coordinator
Dr. Rashmi Gupta

About Programme

The Department of Computer Science and Application organized a highend High-end workshop on Natural Language Processing using Deep Learning: Applications and Research Directions from 18-25 July, 2022. This workshop was Sponsored by Science and Engineering Research Board(SERB) under Karyashala scheme of Accelerate Vigyan Scheme. The major objective of this workshop is to equip to learners with latest advancements in Natural Language Processing method as well as to ignite the research thinking in their mind. In this workshop, 25 students from various universities of Chhattisgarh have been participated. Eminent speakers from IIT, NIT, and IIIT were invited and gave lectures in the FDP.

Inauguration

The inauguration program was held on 25 July 2022 at 10:30AM. Professor (Dr.) Mohammad Afshar Alam, Hon'ble Vice-chancellor, Jamia Hamdard University was graced the inauguration program as chief guest. Inauguration program was preceded by Prof. A.D.N. Bajpai, Hon'ble Vice-Chancellor, Atal Bihari Vajpayee University, Bilaspur. The program was started with saraswati pooja. Prof. H.S. Hota, HoD, Computer Science and Application, has welcomed all the guests. Dr. Rashmi Gupta, Coordinator of the workshop has given introduction of the workshop to all guests and participants. Professor alam has emphasized the need of Natural Language Processing in today's era. He told that various advanced research have been going on in the area of Natural Language Processing and this type of workshops will ignite the mind of students to work in this area. Prof. Bajpai has told that accent and context of the language should be in the area of research so that same words having different meaning in different context can be identified. At the end of the program Mr. Jeetendra Kumar expressed vote of thanks.



Sessions

Day- 1 (July 18th, 2022)

Session -1

Expert: Prof. H.S. Hota, ABV University, Bilaspur

Topic: Introduction to Natural Language Processing



In this session, Prof. Hota has given introduction of Natural Language Processing. He has explained need of Natural Language Processing in present era. He has explained various subparts of NLP like sentiment analysis, language modelling, Language Translation, Next word prediction etc. He has also shown results of some research work done in the area of sentiment analysis.

Session -2

Expert: Dr. Tapan Kumar Jain, IIIT Nagpur

Topic: Introduction to Python Programming and Python Libraries



In this session, Dr. Tapan Kumar Jain has given the introduction of Python to participants. He has explained python basics, process of programming, programming methodologies, tools for python programming, data types, types of operators, comments, and error handling. He has also explained various python libraries which are used for NLP task.

Session -3

Expert: Dr. Tapan Kumar Jain, IIIT Nagpur

Topic: Hand on Python Programming



In this session, Dr. Tapan Kumar Jain has conducted a handon session on python programming. He has shown various practical examples on google colab.

Day-2 (July 19th, 2022)

Session- 4

Expert: Dr. Abhishek Kumar Jain, Jain University Banglore (In online mode)

Topic: Text Preprocessing



In this session, Dr. Abhishek Kumar Jain has explained various text preprocessing techniques. He has explained stop word removal, special symbol removal, contractions etc.

Session- 5

Expert: Dr. Rohit Raza, GGU Bilaspur

Topic: POS Tagging, NER, Regular Expression etc



In this session, Dr. Rohit Raza has explained Part of Speech Tagging, Named Entity Recognition, Regular Expression and Morphological Expression. He has explained various methods for above task.

Session- 6

Expert: Prof. O.P. Vyas, IIIT Allahabad

Topic: Visualizing Data with Python



In this session, Dr. Partha has explained the data visualization with python. At first, he introduced matplotlib library which is used for data visualization with python. Then he explained line plot, histogram, 3D plotting, stream plot, ellipses, plot chart, pie chart, scatter plot, filled plot, polar plot, etc.

Day-3 (July 20th , 2022)

Keynote Speaker



Prof M.K. Verma, Honble Vice-chancellor of of Chhattisgarh Swami Vevikanand Technical University, Durg Bhilai has given their lecture as keynote speaker on third day of the workshop. He has given lecture on importance and challanges of NLP. He told that NLP is a new research area and various challanges are their to work on many NLP related domain

Session- 7

Expert: Dr. Tirath Prasad Sahu

Topic: Word Vectors



In this session Dr. Tirath Prasad Sahu from NIT Raipur has given lecture of word vectors. He has covered fundamental concepts of word vector. He has also covered verious techniques to convert word to vector like word embedding, word2vec, fastext etc.

Session- 8

Expert: Dr. Rekhran Janghel, NIT Raipur

Topic: Introduction to Deep Learning



In this session, Dr. Rekhran Janghel has given lecture of introduction to Deep Learning. He has covered fundamentals of Deep Learning. He has also covered various Deep Learning models like CNN, RNN, LSTM etc.

Session -9

Expert: Dr. Rashmi Gupta

Topic: Hands on NLP Basics



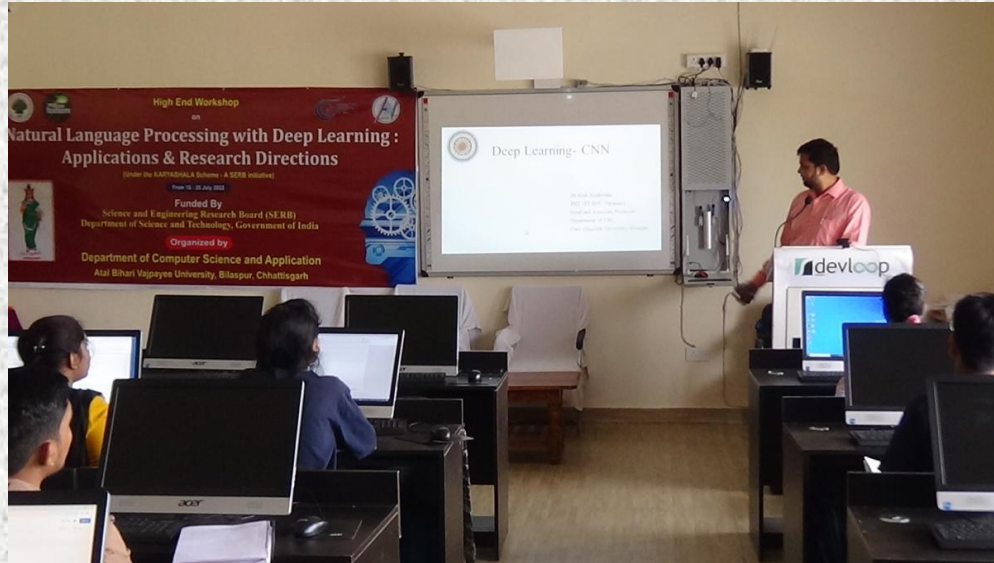
In this session, Dr. Rashmi Gupta has given hands on training on NLP Basics. She has demonstrated text cleaning, text preprocessing, text embedding to participants.

Day -4(July 21th, 2022)

Session -10

Expert: Dr. Alok Kumar Kushwaha

Topic: Convolutional Neural Network



In this session, Dr. Alok Kushwaha has given lecture on Convolutional Neural Network. He has covered various aspects of CNN layers like Convolutional layers, max-min pool, dropouts etc.

Session -11

Expert: Mr. Amit Kumar Baghel, GGU Bilaspur

Topic: Recurrent Neural Network

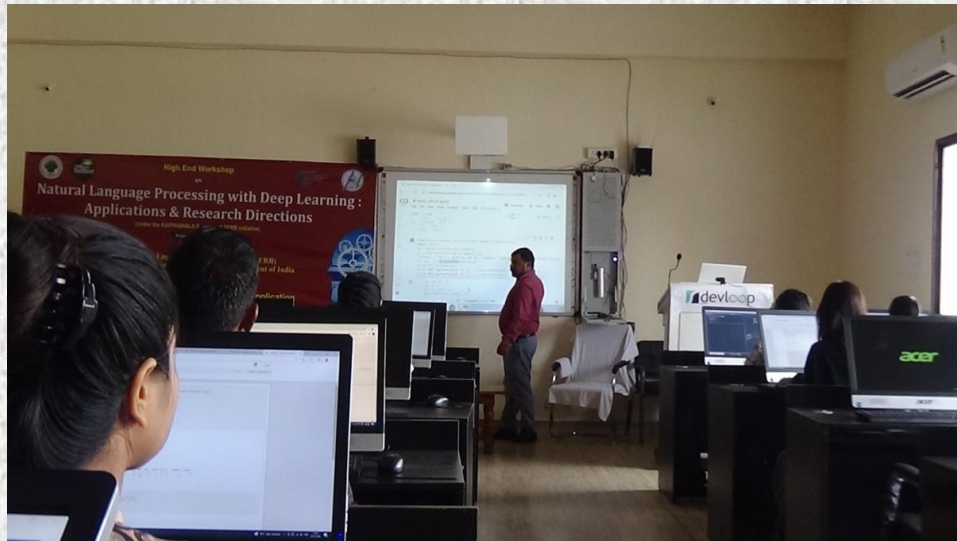


In this session, Dr. Amit Kumar Baghel has given lecture on Recurrent Neural Networks. He has covered fundamental concepts of recurrent neural networks and it's variants.

Session -12

Expert: Mr. Jeetendra Kumar, ABV University, Bilaspur

Topic: Hands on word vectors



In this session Mr. Jeetendra Kumar has demonstrated various word vector and word embedding techniques practically.

Day- 5 (July 22 , 2022)

Session -13

Expert: Dr. Saumajit Pramanik, IIT Bhilai

Topic: Fundamentals of Seq2seq models



In this session, Dr. Saumajit Pramanik has given lecture on Fundamentals of Seq2seq models. He has explained working of encoder and decoder.

Session -14

Expert: Dr. Saumajit Pramanik, IIT Bhilai

Topic: Seq2Seq model and its variants



In this session, Dr Saumajit Pramanik has given lecture on variants of seq2seq model like attention technique, point generation technique, beam search technique etc.

Session -15

Expert: Mr. Nilesh Verma, Amlgo Labs

Topic: Hands on Text Summarization



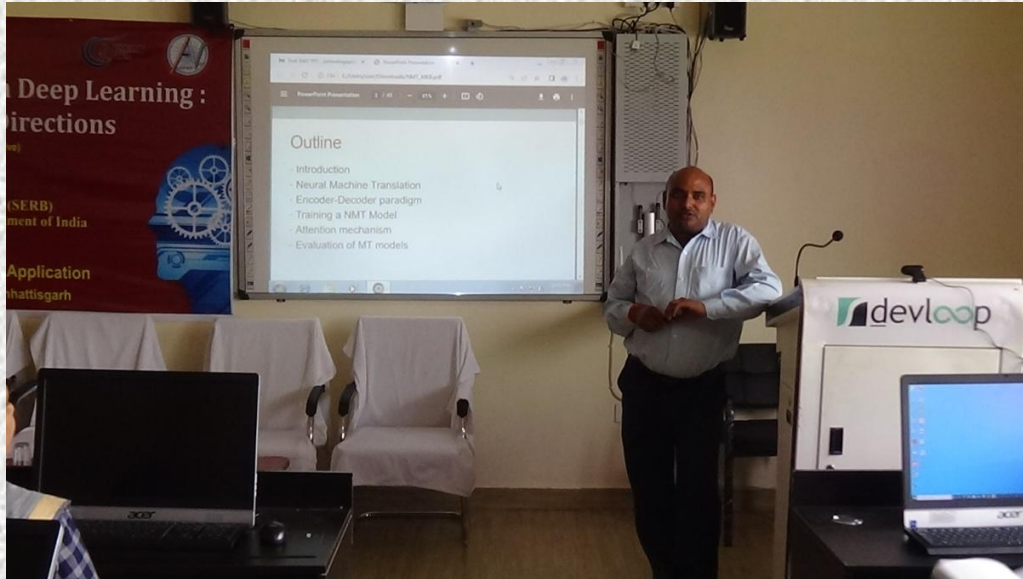
In this session Mr. Nilesh verma from Amlgo Labs has demonstrated text summarization using NLP. He has demonstrated both extractive and abstractive summarization.

Day- 6 (July 23 , 2022)

Session -16

Expert: Dr. Manish Kumar Bajpai, IIITDM, Jabalpur

Topic: Neural Machine Translation

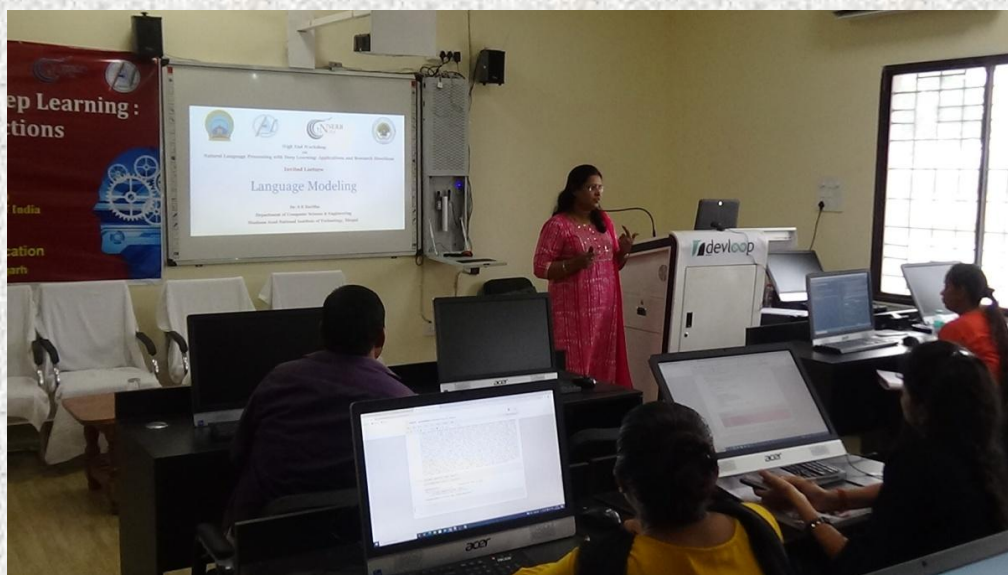


In this session, Dr. Manish kumar Bajpai has given lecture on neural machine traslation. He has covered all fundamental aspects of neural machine translation.

Session -17

Expert: Dr. S.K. Saritha, MANIT Bhopal

Topic: Language Modelling

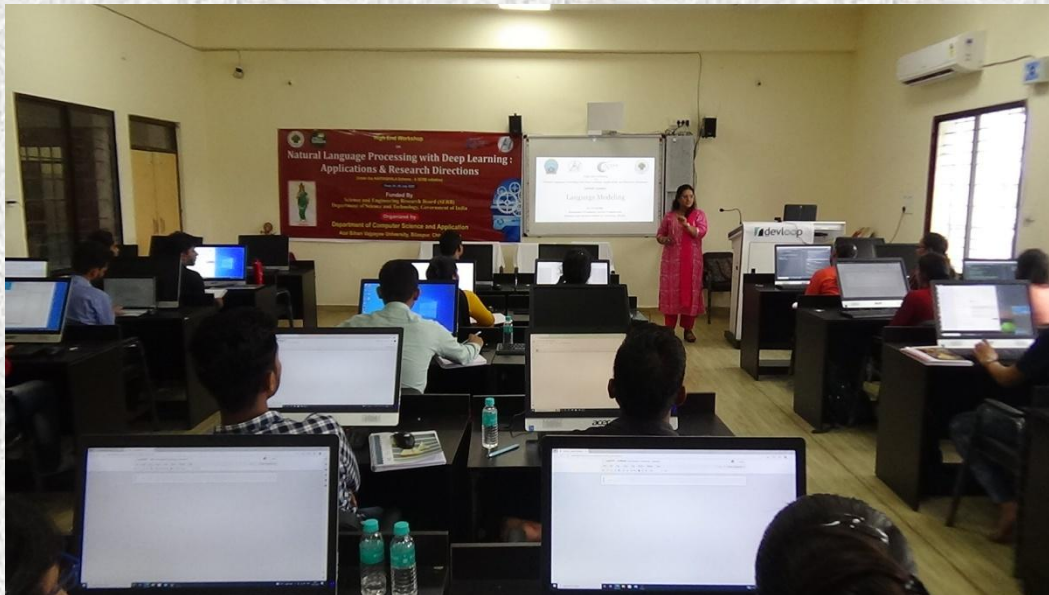


In this session, Dr. S.K. Saritha has given lecture on language modeliiing. She has explain fundamentals of language modelling, language translation, next word prediction etc.

Session -18

Expert: Dr. S.K. Saritha, MANIT Bhopal

Topic: Hands on NMT



In this session, Dr. S.K. Saritha has demonstrated language modeling, language translation, next word prediction etc.

Day- 7 (July 25, 2022)

Session -19

Expert: Mr. Nilesh Verma, Amlgo Labs

Topic: Transformer



In this session, Mr. Nilesh Verma has given lecture on transformers. He has covered various aspects of transformers like self attention, encoder, decoder etc.

Session -20

Expert: Mr. Nilesh Verma, Amlgo Labs

Topic: PTLM and Finetuning

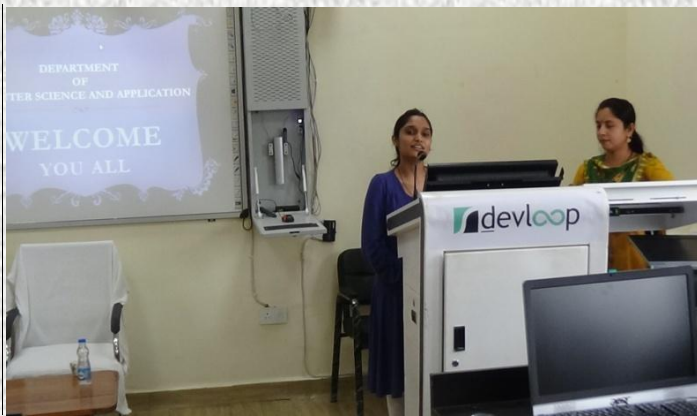


In this session, Mr. Nilesh Verma has given lecture pretrained language models like BERT, BART, GPT, Pegasus etc. He has also demonstrated finetuning to these model on specific domains.

Assessment-After completing all sessions, the test was conducted. The assessment test was of 20 marks and all participants have cleared the exam and got the certificate.

Valedictory

At the end of the faculty development programme, a formal valedictory function was held. In this function, many participants shared their feedback about the faculty development Programme. Dr. H.S. Hota, Head, Department of Computer Science and Application, ABV University, Bilaspur addressed the participants and wished them a bright future. Dr. Rashmi Gupta, Coordinator, Faculty Development Programme expressed vote of thanks.



Media Coverage



बिलासपुर भास्कर 21-07-2022

पत्रिका ७ जाभायाप मलमा २२२१ मपवा ५३१ जाप मायूख २२११

हमारी कल्पना मातृभाषा में ही होती है किसी भी दूसरी भाषा में नहीं: प्रो. वर्मा

सिटी रिपोर्टर | बिलासपुर

नेचुरल लैंग्वेज प्रोसेसिंग की कार्यशाला का आयोजन किया जा रहा है। इसमें मुख्य अतिथि के रूप में स्वामी विवेकानंद तकनीकी विश्वविद्यालय के कुलपति प्रो. एमके वर्मा शामिल हुए। उन्होंने नेचुरल लैंग्वेज प्रोसेसिंग की प्रासंगिकता को रेखांकित किया और कहा कि यह आज की आवश्यकता है। राष्ट्रीय शिक्षा नीति मातृभाषा में अध्ययन-अध्यापन पर जोर देती है। हमारी कल्पना मातृभाषा में ही होती है किसी दूसरी भाषा में नहीं इसलिए इस दिशा में नेचुरल लैंग्वेज प्रोसेसिंग अपनी महत्वपूर्ण भूमिका अदा कर सकती है। उन्होंने आगे कहा कि इसमें शोध



को नई दिशा मिल रही है। इसकी चुनौतियों के दिशा में शोध कार्य को आगे बढ़ाने की आवश्यकता है। यह हमें देखना है, कि एक ही शब्द के विभिन्न समानार्थी शब्दों को मशीन किस प्रकार किसी विशेष संदर्भ में चिह्नित कर सकता है। कार्यक्रम के अध्यक्ष विश्वविद्यालय के कुलपति आचार्य अरूण दिवाकर नाथ वाजपेयी ने कार्यशाला के विषय की

प्रासंगिकता को रेखांकित किया। स्वागत भाषण विभागाध्यक्ष डॉ. एचएस होता ने कार्यशाला की रूपरेखा प्रस्तुत की। कार्यक्रम समन्वय डॉ. रश्मि गुप्ता ने कार्यक्रम का संचालन किया व धन्यवाद ज्ञापन विभाग की शिक्षक श्रिया साहू ने किया। कार्यक्रम में मुख्य रूप से विश्वविद्यालय के कुलसचिव डॉ. सुधीर शर्मा भी उपस्थित थे।

अंज... का... सिटी म्यूजि... आयो... शाम... ऑडि... में शा... प्रस्तुति... कामि... बताय... जय... पर्यट... विशि... कार्य... छात्रों... कोरि... सिता... तबले... गायन... कौशि... गिटार... देवाशं... गौरीशं...

