Value added course on
Natural Language Processing using Python
(Dec 20-Dec 24, 2021)
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Natural language processing is a branch of computer science and artificial intelligence which is concerned with interaction between computers and human languages. Natural language processing is the study of mathematical and computational modeling of various aspects of language and the development of a wide range of systems.

Duration of Course: 40 Hrs

About Instructors:

This course will be taught by a team of various eminent programming experts from Industry and SIESGST faculty members of Electronics and telecommunication Department.

Various Industry Experts from Natural Language Processing Domain:

1. Mr. Samarth Sarin - (Gartner- Data Scientist)

Expert talk:

1. Ms. Pranita Mahajan (Assistant Professor, SIES GST)

Faculty Members:

1. Prof. Madhuri Kulkarni (Assistant Professor)
2. Prof. Priyanka Kadam (Assistant Professor)

Course Objectives:

1. To understand challenges of empirical methods for natural language processing (NLP) applications.

2. To introduce basic mathematical models and methods used in NLP applications to formulate computational solutions.

3. To provide the knowledge on designing procedures for text analysis and hands-on experience using NLP tools.

Course Outcomes:
At the end of the course Students will be able to

1. Explain the fundamental mathematical models and algorithms in the field of NLP.

2. Apply mathematical models and algorithms to implement different application in the field of NLP

3. To enhance programming skills for computational linguistics applications of NLP.

Course Content:

Prerequisite:
1. Basic knowledge of python.
2. Environment setup: a) Download Anaconda b) Run setup file

Module	Content	Duration
1.	Introduction to NLP: What is NLP, Need of NLP, NLP Libraries, Applications of NLP (Case Studies), Assignment.	8 Hrs
2.	Text Processing: Tokenization (word and sentence), Normalising, Stemming, Lemmatization, Assignment. Stemming: Porter Stemmer, Lancaster Stemmer, Snowball Stemmer	8 Hrs
3.	Word Net: What is WordNET, The Distinction Between WordNET and Thesaurus, Structure of WordNET, Relations in the WordNET, Implementation of WordNET PoS: PoS tagging, PoS Tagging with Stop words, Dependency Parsing, Constituency Parsing. Need of Frequency based Embedding: Bag of word, TF IDF	8 Hrs
4.	Named entity recognition : NER using NLTK, NER using spaCy, Applications, Visualization using Parse tree. Word embedding: One hot encoding, Word2Vector, Glove N-Gram : Word to vector using character N-Gram	8 Hrs
5.	Text classification in NLP using machine learning, Google Dialog flow and Chatbot	8 Hrs
6.	Project Presentation and Case study Discussion	

Assessment:

1. Module wise assignments and quizzes should be completed by students, based on that certificate will be issued.

Internship:

Project Based Internship after successful completion of the course will be offered to the participants.

Course Coordinators: Prof. Madhuri Kulkarni
madhurik@sies.edu.in
9595008467

Prof. Priyanka Kadam
priyankak@sies.edu.in
7045410881

Day wise schedule of workshop

Day	Activity
Day 1 (20/12/2021)	Introduction on Natural Language Processing and its applications, NLP using python libraries Hands on NLP using Python libraries
Day 2 (21/12/2021)	Getting started with NLTK, Tokenizing Text, Normalizing text, segmentation, formatting Hands on the above topics with exersies using Jupyter or colab Assignment Quiz1
Day 3 (22/12/2021)	Bag of words and TF-IDF, Part of speech tagging Hands on the above topics with exersies using core NLP tool
Day 4 (23/12/2021)	Word embedding, N-grams, Named Entity Recognition (NER), word net Hands on the above topics with exersies using Dialogflow Assignment Quiz2
Day 5 (24/12/2021)	Text classification in NLP using machine learning, Google dialogflow and Chatbot Hands on the above topics with exersies using Dialogflow

Department of Electronics and Telecommunication Engineering
<u>Event Report</u>

Natural Language Processing using Python (December 20th to December 31st, 2021)

| **Event Information** |
|:---:|
| **Event Type:** SDP/Internship |
| **Event title**: Natural Language Processing using Python |
| **Resource Person:** 1. Industry expert Mr. Samarth Sarin - (Gartner- Data Scientist)
 2. Expert talk: Ms. Pranita Mahajan (Assistant Professor, SIES GST)
 3. Prof. Madhuri Kulkarni (Assistant Professor, SIES GST)
 4. Prof. Priyanka Kadam (Assistant Professor, SIES GST) |
| **Event date:** December 20th to December 31st, 2021 |
| **Organized for:** Students |
| **Organized by** Department of Electronics and Telecommunication |
| **Target audience (branch & nos.):** EXTC(19) + CE (7) +IT (6) +MECH (1) = 33 |
| **Attachments:**   **1. Photographs (in JPEG/PNG)**
       2. Attendance report
       3. Feedback |

| Event Description |
|---|
| Department of Electronics and Telecommunication is organized SDP/internship on **Natural Language Processing using Python from 20th December to December 31st 2021.**

This course provides the broad introduction to the fundamentals of the Natural Language Processing long with hands on in python. This course covered different techniques used in NLP such as Tokenization, stemming, lemmatization, BOW, TF-IDT and word embedding.

The session based on Google dialog flow and Chabot was conducted by industry expert from Gartner.

Also one guest session was conducted based on text classification which can be helpful for students to implement their projects.

At the end of course students had submitted mini project in group based on applications of NLP.

Assessment is carried out with the help of quiz, assignments and mini project. |

1. Photographs (in JPEG/PNG)
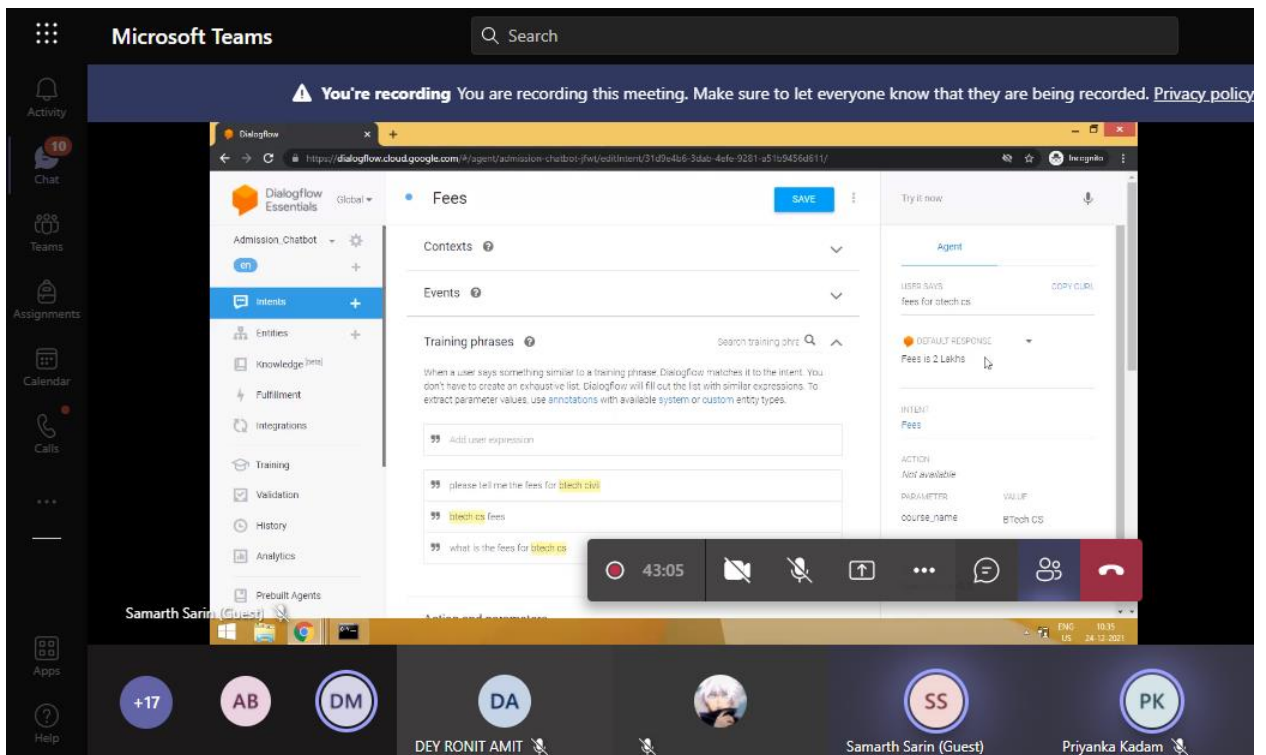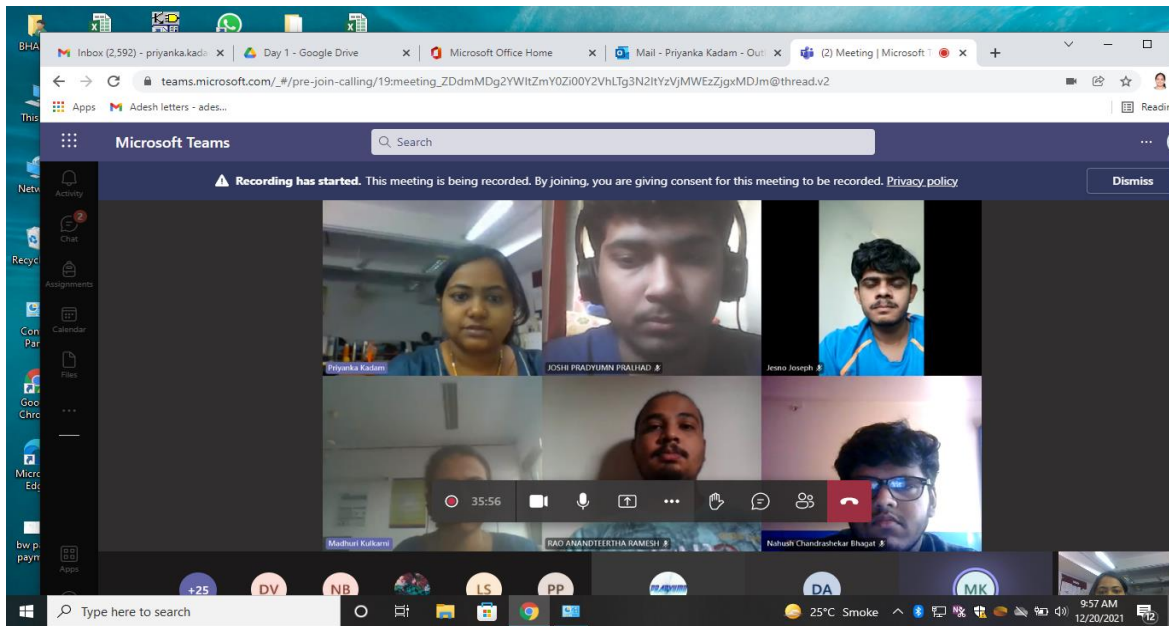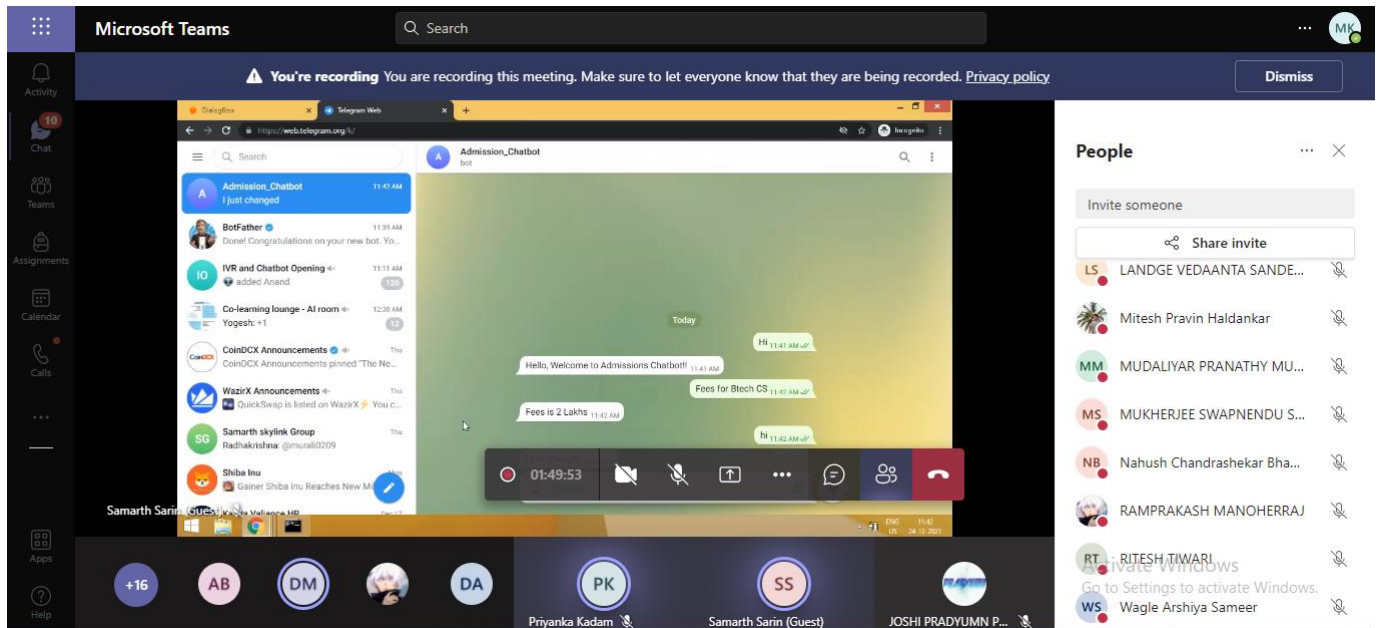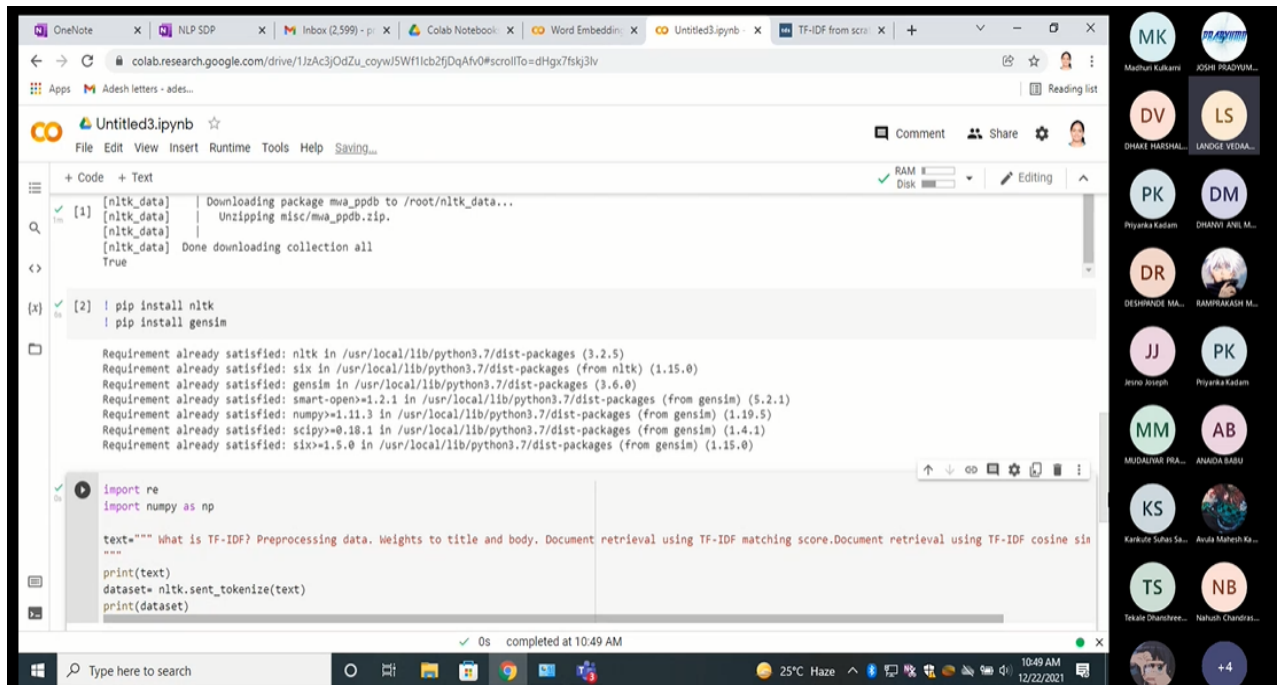
2. Attendance report

Sr. No	Roll No	Name	Class	Branch	20-12	21-12	22-12	23-12	24-12
1	118A3028	AKASH NADAR	BE	IT	p	p	p	p	p
2	119A2027	PRADYUMN JOSHI	TE	EXTC	p	p	p	p	p
3	220A2107	Jesno Joseph	TE	EXTC	p	p	p	p	p
4	118A1034	ANUSHREE KOLHE	BE	CE	p	p	p	p	p
5	220A2103	Nahush Bhagat	TE	EXTC	p	p	p	p	p

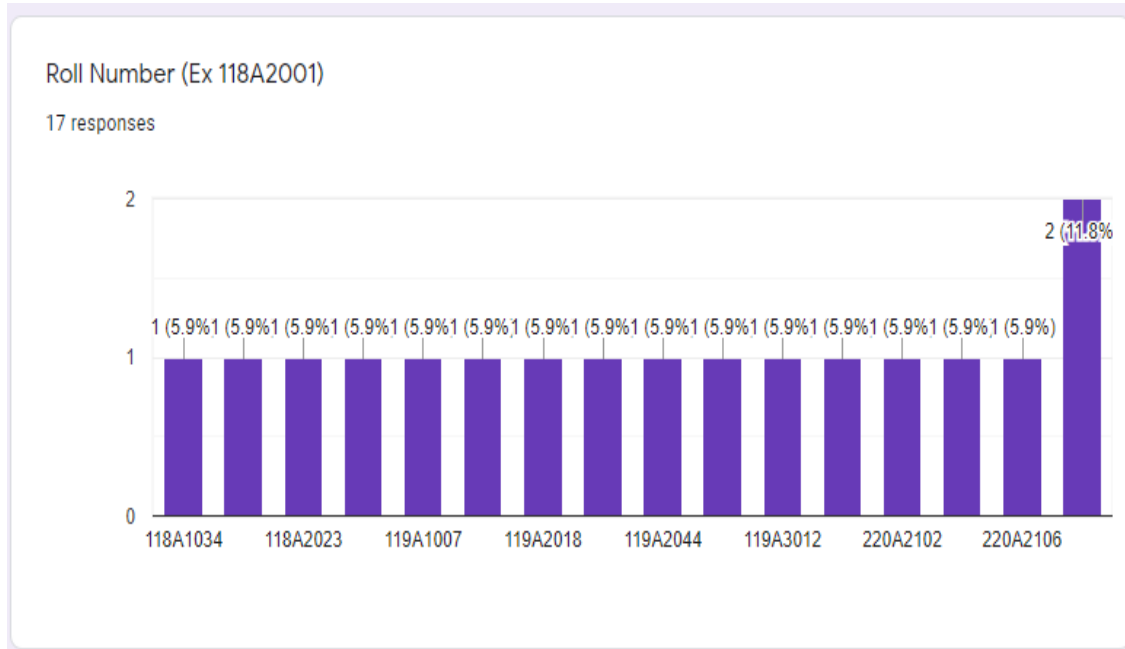|									
6	119A3013	DHANVI MANGE	TE	IT	p	p	p	p	p
7	118A2004	ANAIDA RAGHAVAN	BE	EXTC	p	p	p	p	p
8	119A2043	PRANATHY MUDALIYAR	TE	EXTC	p	p	p	p	p
9	119A2018	PAVLIN FERNANDES	TE	EXTC	p	p	p	p	p
10	119A3024	JAIJANANI RADHAKRISHNAN	TE	IT	p	p	p		p
11	118A1067	ANANDTEERTHA RAO	BE	CE	p	p	p		p
12	119A3012	RONIT DEY	TE	IT	p	p	p	p	p
13	119A1087	SRUTHI PANKAJAKSHAN	TE	CE	p	p			p
14	119A2037	VEDAANTA LANDGE	TE	EXTC	p	p	p	p	p
15	220A2102	Avula Kanakaiah	TE	EXTC	p	p	p	p	p
16	118A2017	MANASI DESHPANDE	BE	EXTC	p	p	p	p	p
17	119A1017	SRIVARI CHETTIYAR	TE	CE	p	p	p	p	p
18	118A2023	RATNAHARSH GANNERWARAM	BE	EXTC	p	p	p	p	p
19	119A1007	AKSHAY SRIKANTH	TE	CE	p	p	p	p	p
20	119A3006	MEHUL ASWAR	TE	IT	p	p	p	p	p
21	220A2127	Dhanshree Tekale	TE	EXTC	p	p	p	p	p
22	220A2106	Mitesh Haldankar	TE	EXTC	p	p	p	p	p
23	118A3020	SURAJ IYER	BE	IT	p	p	p	p	p
24	220A2108	Suhas Kankute	TE	EXTC	p	p	p	p	p
25	119A2024	HARSHAL DHAKE	TE	EXTC	p	p	p	p	p
26	118A2006	ANJANA ASHOKKUMAR	BE	EXTC	p	p	p	p	p
27	119A2044	SWAPNENDU MUKHERJEE	TE	EXTC	p	p	p	p	p
28	119A1074	PRAPTHI SHETTY	TE	CE	p	p	P	A	p
29	118A2086	RAMPRAKASH NADAR	BE	EXTC	p	p	p	p	p
30	220A2130	Arshiya Wagle	TE	EXTC	p	p	p	p	p
31	118A2065	ROHAN MORE	BE	EXTC	p	p			p
32	119A1041	MANOJ INBARAJAN	TE	CE	p	p	p	p	
33	118A6024	KSHIRSAGAR PARAG SANJAYKUMAR	BE	Mech	p	p	p	p	p

Mini project list:

1) Be safe - Personal medical Assistant
2) Find Covid Vaccine Slot(India) using Python
3) Automatic Text Summarization
4) Student Result Management System
5) Twitter Sentiment Analysis
6) Chatbots Across different platforms like WhatsApp, Telegram, Google Assistant, Fb Messenger, Websites, Slack
7) Sentiment Analysis on Real time Twitter Data

8) Covid Bot for Nearest Testing Centers, Plasma Donation and Receiver registration etc
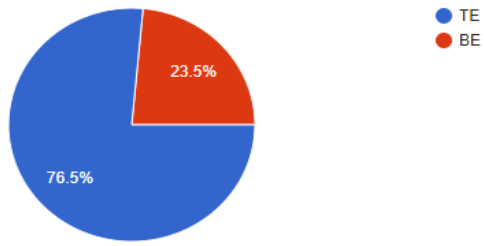9) Topic Modelling for different set of Documents to find out prominent topics

10) Toxic Comment Classification using Machine Learning / Deep Learning

11) Quora Insincere Questions Classification using Machine / Deep Learning

12) Be safe - A chatbot to support safety procedures

13) Find Covid Vaccine Slot(India) using Python
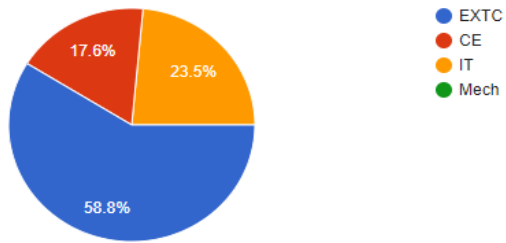
3. Feedback (Analysis)

Roll Number (Ex 118A2001)
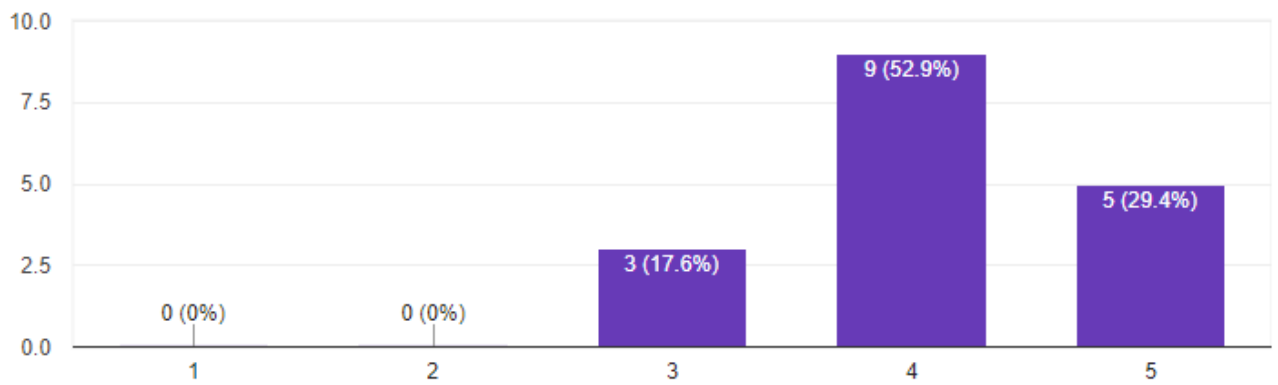
17 responses

Class

17 responses

- TE
- BE

76.5%

23.5%

BRANCH

17 responses

- EXTC
- CE
- IT
- Mech

17.6%

23.5%

58.8%

Are you able to explain the fundamental mathematical models and algorithms in the field of NLP?

17 responses

0 (0%) 0 (0%) 3 (17.6%) 9 (52.9%) 5 (29.4%)

Are you able to apply mathematical models and algorithms to implement different application in the field of NLP?
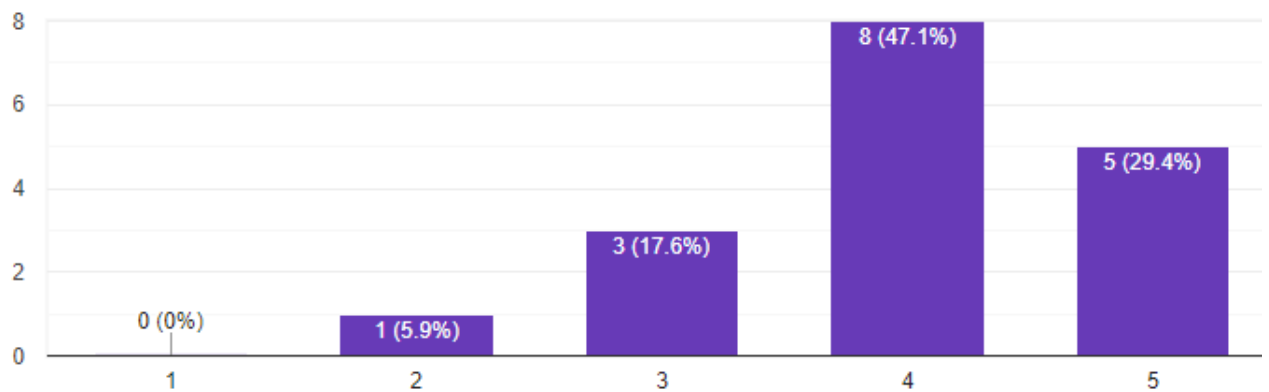
17 responses

Are you able to enhance programming skills for computational linguistics applications of NLP.

17 responses
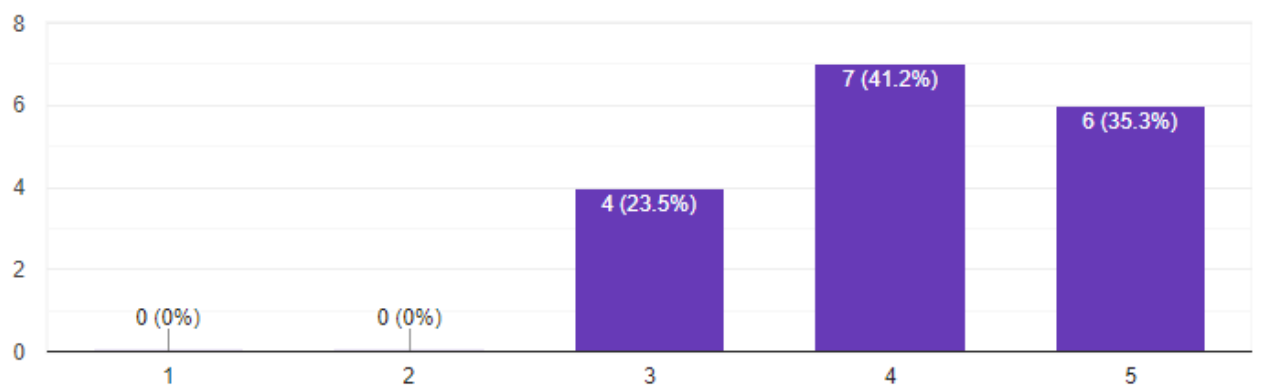
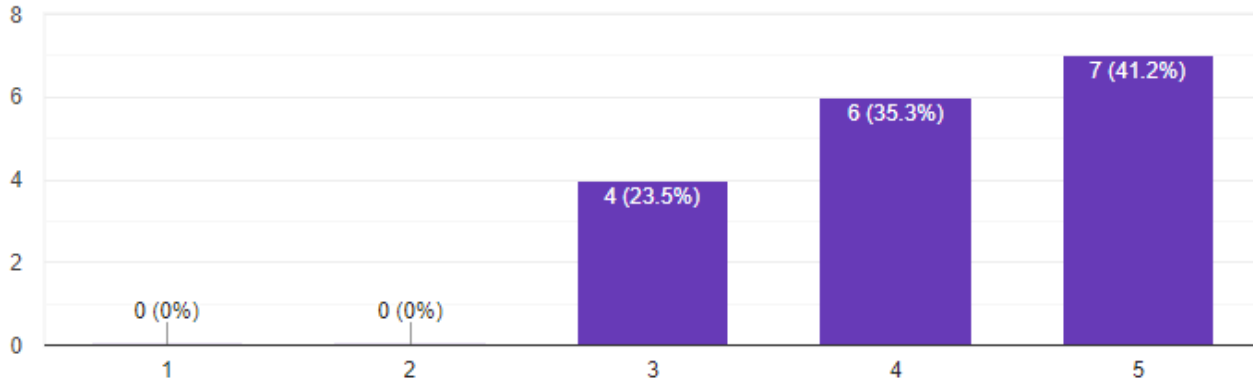Content delivery by speakers
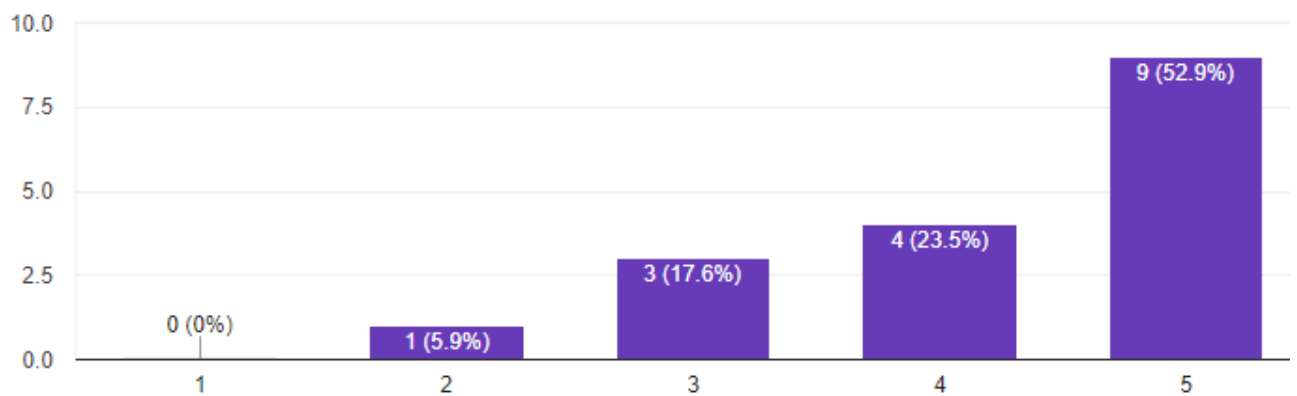
17 responses

How relevant do you think it was for your future?
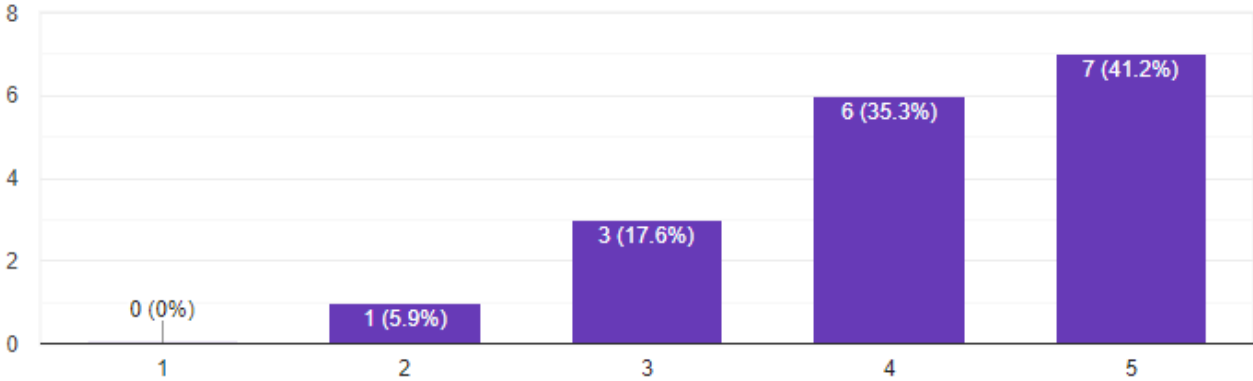
17 responses

Effectiveness of SDP

17 responses

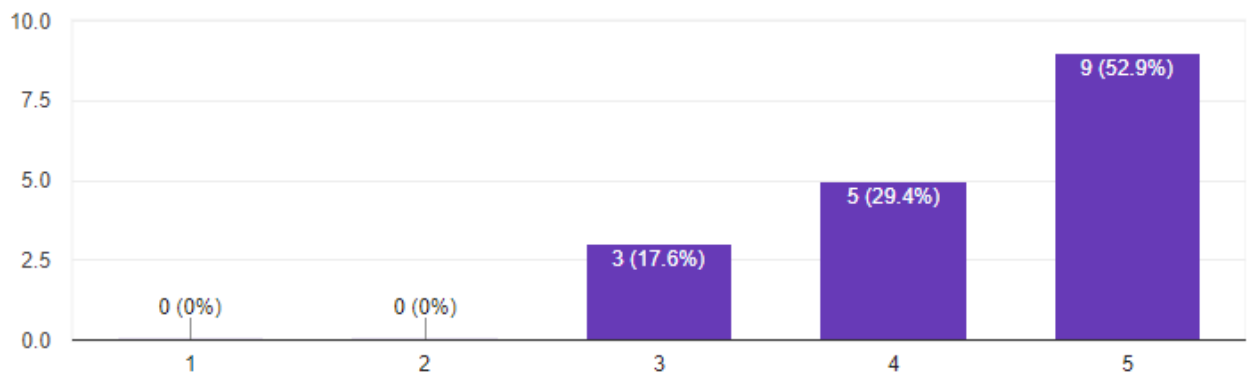Any other suggestion or Your Views about the SDP.

17 responses

NA

Nothing

It was great

Needs to share ideas more and share notes + resources for the same

no

Thank you mam that i have learned a great things about NLP

Expert session could have been shorter. Everything else was good.

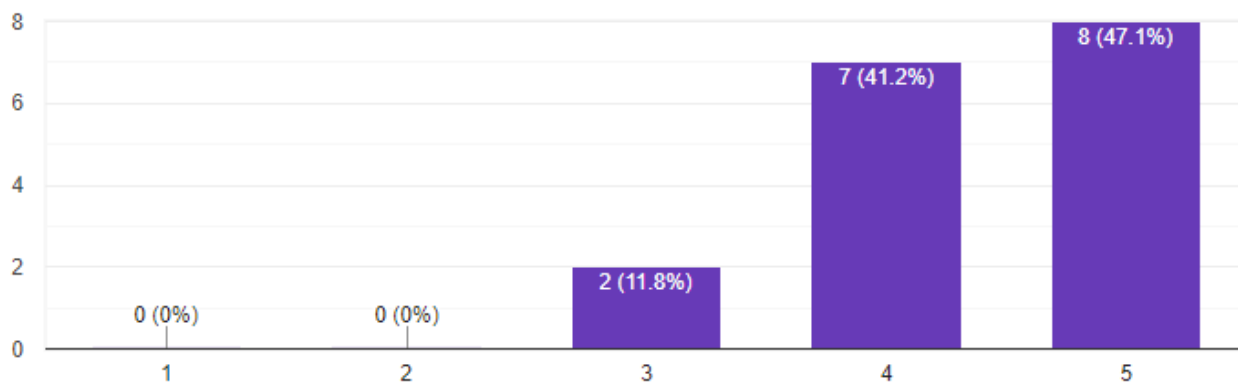NIL

-

Feedback on Expert session
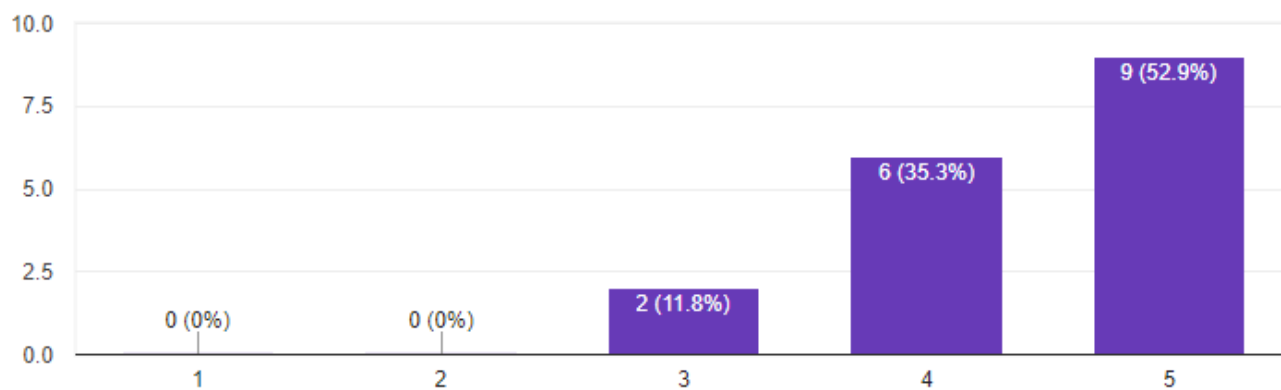
Content delivery by speakers

17 responses

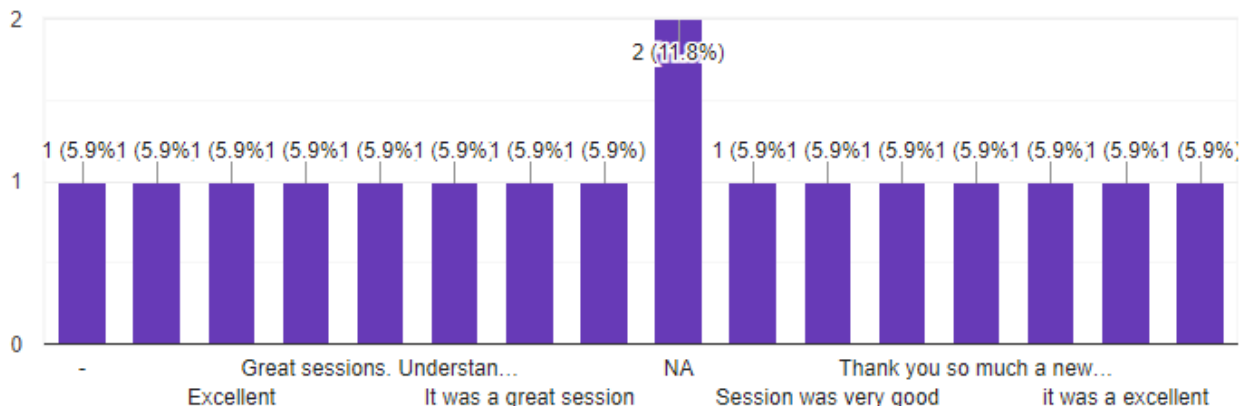## How relevant do you think it was for your future?

17 responses

Effectiveness of the session

17 responses

Appreciations, if any

17 responses

Impact Analysis:

In two weeks SDP on 'Natural Language Processing using Python', Getting started with NLTK, Tokenizing Text, Normalizing text, Bag of words and TF-IDF, Part of speech tagging, Text classification in NLP using machine learning. Advance topics like Google dialogflow and Chatbot were learnt by students through sessions, assignments, exercises. All the students successfully completed projects.

4. **Certificate**

Remuneration form

SIES GRADUATE SCHOOL OF TECHNOLOGY

FUNDS REQUISITION FORM

Date of request: 23/12/2021

Faculty /Staff Development Programme /Student Development Programme Details :

Natural language Processing Using Python

Date and Venue : 24/12/2021 SIES GST Nerul Navi Mumbai

Topic : Google diag flow and chatbot

Speaker Details: Mr. / Mrs. Samarth sarin

Credentials: Data scientist at Gartner

Coordinator Details: Mr. /Mrs. : Maahuri kulkarni, Priyanka kadam

Details of expenses : 5.000/-

Funds requested: For Full day 8 H&

Amount Sanctioned: 5000/-

HOD 23/12/21

PRINCIPAL

Bank Details

Account Holder Name	SAMARTH SARIN
Bank Name	SBI Rajouri Garden New Delhi 110027
Bank A/c No.	SBIN00I6337 34965492991
IFSC Code	SBIN0016337

Received
09/17/2022