

### **ABOUT THE COURSE**

This course offers a foundational understanding of Natural Language Processing.. Participants will learn about key topics such as Transformer Architecture which is the backbone of almost all the deep learning models in the fields of NLP and Computer Vision. Application of Transformers to fields like Machine Translation, Summarization, Classification, Question Answering, Chatbot design will be discussed in details. The participants also will gain in depth knowledge into the working of Generative Language Models like ChatGPT. Hands-on projects will reinforce learning, focusing on different applications. By the course's end, participants will gain in depth knowledge on various NLP tasks, practical skills in implementing deep learning models, and further exploration in the field. Whether beginners or seasoned professionals, learners will find this course interesting and invaluable for mastering the fundamentals of NLP in a concise and accessible format.

### **COURSE OBJECTIVE**

- Master the fundamental principles of NLP tasks like text classification, sequence labelling, Machine Translation, Summarization, Classification, Question Answering, Chatbot design.
- Acquire practical experience through hands-on projects, applying deep learning techniques to real-world datasets for all the above mentioned tasks fostering the ability to solve complex problems using deep learning methodologies.

### **COURSE CONTENT**

#### **Introduction to Natural Language Processing,**

- Text processing
- Word Embedding
- Text Classification

#### **Transformers**

- Basic architecture
- Application to Text Classification
- Sequence labelling with LSTM

#### **Machine Translation, Summarization**

- Basics of SMT, NMT and implementations
- Basics of Abstractive and Extractive Summarization and implementations

#### **Question-Answering System, Chatbot Design**

- Designing a QA system, specifications, training, decoding and implementations
- Designing Chatbots efficiently using pretrained models and models developed from scratch

#### **Language Models**

- Introduction to Probabilistic Language models with NLTK implementation
- Design considerations of state of the art models like ChatGPT.
- Implementation of Neural Language Models



**Short Term Course**  
on

## **Natural Language Processing** (Hybrid Mode)

**10<sup>th</sup>–14<sup>th</sup> JUNE 2024**

### **Chairperson**

**Prof. Bibhudutta Sahoo, HoD  
(CS)**

### **Convener**

**Dr. Tapas Kumar Mishra  
Dr. Pankaj Kumar Sa**

**Department of Computer Science  
and Engineering  
National Institute of Technology  
Rourkela-769008, Odisha**

<https://mishra-tapas.github.io/stc.html>

## ABOUT NIT ROURKELA

National Institute of Technology (NIT) Rourkela is an institution of national importance funded by the Ministry of Education. NIT Rourkela was established as Regional Engineering College (REC) on August 15, 1961. In India, it was ranked 16 among engineering colleges by the National Institutional Ranking Framework (NIRF) in 2023. For details about the institute please visit us at [www.nitrkl.ac.in](http://www.nitrkl.ac.in).



## ABOUT DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Department of Computer Science & Engineering, NIT, Rourkela was established in 1982. Since its inception, the Department is under dynamic progress and is able to establish the reputation for imparting quality education both at undergraduate and graduate programmes. The department also offers Ph. D. for regular as well as sponsored candidates. Please visit <https://website.nitrkl.ac.in/CS/> to know more about the Department of CSE. The department has well equipped modern laboratories such as Software Engineering, Distributed Object Systems, Information Security & Data Communication, Image Processing & Cluster Computing and Advanced Database Engineering Labs for pursuing research keeping in view of the technological advancement.



## Target Participants

The STC is of immense interest to UG/PG/Ph.D students, research scholars, faculties, industry professionals working in the areas of Natural Language Processing. The STC will provide a unique opportunity to all the participants to view various NLP problems from the lenses of Machine Learning and Deep learning.

## Important Dates

Registration Starts	25.03.2024
Registration Ends	30.03.2024
Registration Confirmation	15.05.2024
Course Schedule	10.06.2024-14.06.2024

A maximum of 60 participants will be shortlisted.

## Prerequisite

The participants would be greatly benefitted if they opt for this course combined with the STC on Deep Learning with applications and practicals offered in the department from 03.06.2024 onwards. Basic python proficiency is desirable.

## Nearby places to visit



**Khandadhar  
Waterfall**



**Pitamahal Dam**



**Vedvyas Temple**



**Mandira Dam**

## REGISTRATION & FEE PARTICULARS

### Registration Fee

Students	Rs. 2000/-
Faculty from Academia	Rs. 5000/-
Industry participants	Rs. 7000/-

### Accommodation

Guest House	As per Institute norms
Hostels (Students)	

Registration fees include Registration Kit, Refreshment, Tea and Snacks and 18% GST. (Lodging, boarding lunch and dinner facility can be availed on separate payment basis and based on availability.)

### BANK ACCOUNT DETAILS FOR REGISTRATION

Account Name: CONTINUING EDUCATION

NIT ROURKELA

Account No.: 10138951784

Bank Name: State Bank of India (SBIN0002109)

Branch: NIT Rourkela Campus

IFSC Code: SBIN0002109

### REGISTRATION FORM

To complete the online registration, the participants need to fill the following google form:

Click here for the Google Form Registration Link

**Patron:** Prof. K. Umamaheswar Rao, Director

**Chairman:** Prof. Bibhudatta Sahoo

**Convener:** Dr. Tapas Kumar Mishra

**Dr. Pankaj Kumar Sa**

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<https://mishra-tapas.github.io/stc.html>