

## About the Foreign Speaker

Erik Cambria is the Founder of SenticNet, a Singapore-based company offering B2B sentiment analysis services, and a Professor at Nanyang Technological University, where he also holds the appointment of Provost Chair in Computer Science and Engineering. His research focuses on neuro-symbolic AI for explainable natural language processing in domains like sentiment analysis, dialogue systems, and financial forecasting. He is recipient of several awards, e.g., IEEE Outstanding Career Award, was listed among the AI's 10 to Watch, and was featured in Forbes as one of the 5 People Building Our AI Future. He is an IEEE Fellow, Associate Editor of many top-tier AI journals, e.g., Information Fusion and IEEE Transactions on Affective Computing, and is involved in various international conferences as keynote speaker, program chair and senior program committee member.

## About the Indian Speaker

Asif Ekbal is currently a Professor of AI and Data Science, IIT Jodhpur (on lien from IIT Patna). His research interests are in the broad areas of Artificial Intelligence, Natural Language Processing and Machine Learning. Currently, his research focuses on Information Extraction, Machine Translation, Sentiment Analysis, Emotion Analysis, Dialogues and Text mining. In these areas he has authored or coauthored around 300 papers in the reputed journals and conferences. His research is supported by the Industries, such as Accenture, Wipro, Flipkart; and the govt. agencies such as MeITY, MHA, CDOT etc. He is the recipient of the Best Innovative Project Award from the "Indian National Academy of Engineering (INAE)", JSPS Invitation Fellowship from the Govt. of Japan and Visvesvaraya Young Faculty Research Fellowship Award from Govt of India. He is listed in the top-2% scientists of Stanford University findings. He has been serving as an Associate/Acton Editors of prestigious journals, such as Neural Networks, Computer Speech and Language, ACM TALLIP, Plosone etc, and is involved in various international conferences as Area Chair, PC Co-chair, Senior PC member.

## Department of CSE, IIT Patna

The department of CSE was established in 2008 and currently offers undergraduate and postgraduate and undergraduate programmes in Computer Science and Engineering, Artificial Intelligence and Data Science, & Artificial Intelligence.

## Objectives of the Course

The primary objectives of the course are as follows:

- Exposing participants to the fundamentals of Data, AI, and NLP
- Providing a description of the main applications of Information Retrieval and Extraction
- Describing the main methods and techniques used in development of such applications,
- Communicating to the participants advanced techniques used in AI and NLP applications.

## IITP-AI-NLP-ML Group

The Artificial Intelligence-Natural Language Processing-Machine Learning (AI-NLP-ML) Group (<http://www.iitp.ac.in/~ai-nlp-ml/>) at Department of Computer Science and Engineering, IIT Patna has started its official journey in June, 2015. The group is dedicated to exploring the frontiers of Artificial Intelligence, Machine Learning and Natural Language Processing. The group comprises 35 members including Research scholars, Research engineers, Lexicographers, B.Tech & M.Tech students. Several R&D projects duly sponsored by Industries and Govt. agencies are currently being undertaken.

## Course Coordinators

**Dr. Asif Ekbal & Dr. Arijit Roy**

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## Global Initiative of Academic Network (GIAN) Workshop

on

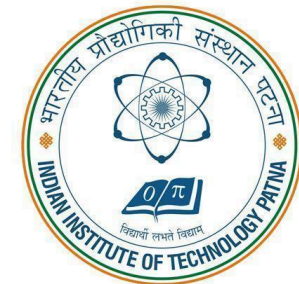
**AI for Data Representation, Analytics, and Visualization**

(Hybrid mode)

March 3, 2025 – March 7, 2025 (5 days)

Organized by

**IITP-AI-NLP-ML Group**



Department of Computer Science  
and Engineering

Indian Institute of Technology Patna

Bihta, Bihar, India

## Overview and Importance of the course

Information is knowledge, information is money, and information is power. Unlike before, a huge amount of information is freely available on the Web today. In an era of social connectedness, in fact, people are becoming increasingly enthusiastic about interacting, sharing, and collaborating through social networks, online communities, blogs, Wikis, and other online collaborative media. In recent years, this collective intelligence has spread to many different areas, with particular focus on fields related to everyday life such as commerce, tourism, education, and health, causing the size of the Web to expand exponentially. The distillation of knowledge from such a big amount of unstructured information, however, is an extremely difficult task, as the contents of today's Web are perfectly suitable for human consumption, but remain hardly accessible to machines. The opportunity to capture opinions and intentions of the general public about social events, political movements, company strategies, marketing campaigns, and product preferences has raised growing interest both within the scientific community, leading to many exciting open challenges, as well as in the business world, due to the remarkable benefits to be had from marketing and financial market prediction. Existing approaches to information retrieval and extraction mainly rely on parts of text in which categorical information is explicitly expressed, e.g., through keywords and their co-occurrence frequencies. However, opinions and intentions are often conveyed implicitly through latent semantics, which make purely syntactical approaches ineffective. In this light, this seminar focuses on the introduction, presentation, and discussion of novel AI techniques that further develop and apply reasoning tools and techniques for information retrieval and extraction. A key motivation for this seminar, in particular, is to explore the adoption of novel reasoning frameworks and AI systems to go beyond a mere word-level analysis of natural language text and provide novel concept-level tools and techniques that allow a more efficient passage from (unstructured) natural language to (structured) machine-processable data, in potentially any domain.

## Who can attend?

- Executives, engineers and researchers from service and government organizations including R&D institutions.
- Students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.

## Lecture Schedule

S. No	Date	Time	Topic
1.	March 3	10:00-11:00 AM	Lecture 1 (Part I): Introduction to NLP & Machine Learning
2.	March 3	11:30 AM-12:30 PM	Lecture 1 (Part II): Introduction to Symbolic & Subsymbolic AI
3.	March 3	14:30-15:30 PM	Tutorial on basic tools of NLP
4.	March 3	16:00-17:00 PM	Tutorial on basic tools on Machine Learning
5.	March 4	10:00-11:00 AM	Lecture 2 (Part I): One-Hot Encoding & Bag-of-Words Model
6.	March 4	11:30 AM-12:30 PM	Lecture 2 (Part II): Vector Space Model & Cosine Similarity
7.	March 4	14:30-15:30 PM	Tutorial and assignment on word representation
8.	March 4	16:00-17:00 PM	Tutorial and assignment on Vector Space Model
9.	March 5	10:00-11:00 AM	Lecture 3 (Part I): Linguistic Analysis & Normalization
10.	March 5	11:30 AM-12:30 PM	Lecture 3 (Part II): Classification & Clustering
11.	March 5	14:30-15:30 PM	Tutorial on Classification Techniques- Naive Bayes, Decision Tree, Support Vector Machine
12.	March 5	16:00-17:00 PM	Tutorial on Clustering Techniques- K-means, LDA, HLDA
13.	March 6	10:00-11:00 AM	Lecture 4 (Part I): Neural Networks & Word Embeddings
14.	March 6	11:30 AM-12:30 PM	Lecture 4 (Part II): Recurrent Neural Networks & Transformers
15.	March 6	14:30-15:30 PM	Tutorial on Keras, Pytorch
16.	March 6	16:00-17:00 PM	Tutorial and assignment using RNN and Transformer
17.	March 7	10:00-11:00 AM	Lecture 5 (Part I): Data Visualization & Interpretation

18.	March 7	11:30 AM-12:30 PM	Lecture 5 (Part II): AI & NLP Applications
19.	March 7	14:30-15:30 PM	Tutorial on tools of Data Visualization
20.	March 7	16:00-17:00 PM	Tutorial on NLP applications- Sentiment Analysis

## Course Fees

- Industry personals: INR 10000
- Faculty members/ Experts from R&D institutions: INR 5000
- Indian students: INR 1,000

## Important Links

**Payment:** <https://www.onlinesbi.sbi/sbcollect/icollecthome.htm?corpID=1968961>

**Application form:**

<https://docs.google.com/forms/d/e/1FAIpQLScFtZ-5A2VQPIHwfiGEOIkJ3iUdZAIeDmeWYy1ys-vH4QFg/viewform?vc=0&c=0&w=1&flr=0>

## Step by Step

- **Step-1** Go to the "Important links" section and register yourself with the registration link.
- **Step-2** For payment, please select the option "GIAN-AI Data Representation" from the "Payment Category" of the dropdown menu. After filling the personal details such as Name, Organization etc., please select appropriate "Category" from the dropdown menu and similarly select the appropriate amount to be paid from the "Registration Fee" and download the fee receipt.
- **Step-3** Please, fill the application form with the required details and upload your payment receipts to confirm your participation.
- No TA, DA will be provided to the participants. Participants have to arrange their own accommodation and food. However, limited shared accommodation may be made available (subject to availability) in the Institute Hostels on request on a first come first serve basis. Payment for accommodation & food is extra as per actuals.