Winter School
on
Deep Learning: From Perceptrons to Transformers

21st January - 12th March, 2022 (Fridays and Saturdays)

Electronics and Communication Sciences Unit, Indian Statistical Institute, Kolkata

www.sites.google.com/view/wsdl2022/

Call for Participation

Chief Patron
Sanghamitra Bandyopadhyay

Advisory Committee
Bhabatosh Chanda
Dipti Prasad Mukherjee
Utpal Garain
Debapriyo Majumdar
Pinakpani Pal
Naqueeb Ahmad Warsi

Program Chair
Swagatam Das

Program Coordinator
Partha Pratim Mohanta

Organizing Chairs
Bikash Santra
Avisek Gupta

Speakers
Professors, Scientists, Post-docs and Research Scholars from ISI, other eminent institutions and R&D labs.

Organizing Committee
Faizanuddin Ansari
Aditya Panda
Kushal Bose
Anal Roy Chowdhury
Suman Ghosh
Suvra Jyoti Choudhury
Suchismita Das
Samriddha Sanyal
Nasib Ullah
Sandip Paul
Sreeya Ghosh
Susmita Ghosh
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The Objective: The Electronics and Communication Sciences Unit, Indian Statistical Institute, Kolkata is organizing the *Winter School on Deep Learning: From Perceptrons to Transformers*. This winter school will focus heavily on imparting a **hands-on experience** towards developing a wide range of classical and advanced deep learning models, in addition to making the associated theory easy to understand. Participants will learn from the basics of machine learning to the advanced deep learning-based approaches with application to Computer Vision and Natural Language Processing. Theoretical lectures will be delivered by renowned professors and scientists (from ISI and other esteemed organizations) who have made significant contributions in their areas of research. The lectures will be supplemented by **extremely detailed hands-on sessions** instructed by post-docs and research scholars.

Course coverage: The winter school will have the following course structure (theory and associated hands-on)

- Basics of Python
- Basics of the Deep Learning Library: PyTorch
- Essentials of Vector Calculus and Linear Algebra for Machine Learning
- Conceptual Fundamentals of Machine Learning, Image Processing, Computer Vision, Natural Language Processing
- Perceptrons and Back propagation
- Ingredients of Deep Learning: Gradient Descent, Batch Normalization, Regularization, Dropout
- Convolutional Neural Networks (CNN), Convolutional Autoencoders
- CNN for Object Classification, Detection, and Segmentation
- Recurrent Neural Network, LSTM, Word Embedding
- Attention Models and Transformer (BERT and Visual Transformer)
- Deep Generative Models (GAN and VAE)
- Weakly Supervised Deep Learning, Self-Supervised Learning
- Meta-Learning and Few-Shot Learning
- Deep Reinforcement Learning
- Explainable Artificial Intelligence
- Geometric Deep Learning

Mode of tutorials: Lectures and Hands-on sessions will be conducted in **online mode only**. All sessions will be on **Fridays** and **Saturdays**, and the recordings will be shared with all the participants.

Who can apply? **Professionals from academia and industry, research/project scholars, masters and final-year bachelors students**. Interested candidates must submit the online application (https://sites.google.com/view/wsdl2022/apply). Selected applicants will be informed to register for the school.

Important Dates:		
	Submit Application on Website	**Dec 28, 2021 – Jan 15, 2022**
	Notification to Selected Applicants	**Jan 16, 2022**
	Registration	**Jan 16 – Jan 19, 2022**
	Course Duration	**Jan 21 – Mar 12, 2022**

For application, registration fees and other details:
www.sites.google.com/view/wsdl2022/