

Deep Learning for Sequences & Structures — Hands-on

Design end-to-end deep learning workflows for biological sequences and macromolecular structures. You will implement modern architectures (CNNs, Transformers, GNNs), leverage protein language models, apply self-supervised objectives, and deliver reproducible experiments with clear interpretability.

Deep Learning for Sequences & Structures

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Session 1

Fee: Rs 10,800 [Apply Now](#)

DL Foundations for Bio Sequences

Data representations & batching

[one-hot/k-mer/embeddings](#) [tokenization](#) [class imbalance](#)

Architectures & training

[CNN / dilated convs](#) [RNN/GRU/LSTM](#)
[optimizers/schedules](#)

Toolchain

[PyTorch / Lightning](#) [TensorFlow/Keras](#) [Weights & Biases](#)

Biases

Session 2

Fee: Rs 14,600 Apply Now

Transformers & Protein Language Models

Attention & transformer stacks for bio

positional encodings **masked LM** **sequence-to-function**

Protein LMs & fine-tuning

ESM / ProtBERT **TAPE / ProGen** **adapters/LoRA**

Efficiency & scaling

mixed precision **gradient checkpointing** **distributed training**

Session 3

Fee: Rs 18,800 Apply Now

Graph & Structural DL (3D/Contacts)

Graphs & 3D representations

contact/distance maps **equivariant nets (SE(3))**
message passing

GNN toolkits & tasks

PyTorch Geometric **DGL** **structure property prediction**

Regularization & robustness

dropout/weight decay **augmentation** **adversarial tests**

Session 4

Fee: Rs 23,600 Apply Now

Mini Capstone: Fine-tune & Explain

Fine-tune a protein LM or GNN for a real task

Theory + Practical

Interpretability & reporting

saliency/CAM/integrated gradients **token/edge**
attributions **model cards**

Deliverables: code, metrics dashboard & brief

notebook/script **ROC/PR plots** **PDF/HTML**