

## Interpretability — SHAP, LIME & Counterfactuals — Hands-on

Learn how to open the black box of biomedical and omics machine learning models. This module walks through global and local interpretability using SHAP and LIME, counterfactual explanations, stability checks, and practical reporting patterns so that domain teams can trust and act on model outputs.

### Interpretability — SHAP, LIME & Counterfactuals

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#### Session 1

**Fee: Rs 8800** [Apply Now](#)

#### Foundations of Model Interpretability

Why interpretability matters in biomedicine

[regulatory and clinical expectations](#) [debugging and model trust](#) [safety and bias detection](#)

Types of explanations and scopes

[global vs local explanations](#) [model specific vs model agnostic](#) [post hoc vs intrinsic interpretability](#)

Human factors in explanation design

**audience awareness (clinician vs data scientist)**

**cognitive load and visual choices** **limits of what explanations can claim**

## **Session 2**

**Fee: Rs 11800** Apply Now

### **SHAP & LIME for Global & Local Explanations**

SHAP concepts and workflows

**Shapley value intuition** **tree based SHAP vs model**

**agnostic** **global importance and dependence plots**

LIME for local explanation of predictions

**local surrogate models** **neighbourhood sampling**

**choices** **strengths and caveats of LIME**

Visualizing and comparing explanations

**summary plots for feature impact** **per patient**

**explanation dashboards** **alignment with domain knowledge**

## **Session 3**

**Fee: Rs 14800** Apply Now

### **Counterfactuals, What Ifs & Sensitivity**

Counterfactual explanation basics

**what if style explanations** **plausibility and**

**actionability constraints** **multiple valid counterfactuals**

Sensitivity of explanations and robustness checks

**stability across random seeds and folds** **perturbation**

**tests on inputs** **detecting spurious shortcuts**

Linking interpretability to fairness analysis

**group wise explanations** **identifying systematically**  
**high risk subgroups** **inputs for bias mitigation**  
**workflows**

#### **Session 4**

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### **Trust, Communication & Audit Trails**

Communicating explanations to domain experts

**storytelling with SHAP and LIME plots** **summary**  
**paragraphs in plain language** **flags and caveats in**  
**reports**

Documentation and audit trails for explanations

**storing explanation artefacts** **versioning models and**  
**explanation configs** **traceability for regulated use**  
**cases**

Deliverables: interpretability report pack

**global and local explanation figures** **R / Python**  
**scripts using SHAP and LIME** **template narrative for**  
**methods section**