SESSION PLAN

Session Name	Machine learning: Logistic Regression

Learning Outcomes(10 min)

- Understand when to use Logistic Regression
- Know the concepts of odds, odds ratio and sigmoid function
- Build a linear regression model using sklearn
- Understand the different evaluation metrics for classification tasks

Prerequisites for the Mentor	Prerequisites for the Student
● Machine learning: Logistic Regression	● Machine learning: Logistic Regression

Timing	Instructor Activities

160 min	● Ask learners what they have learned from the concept? (10 min)
	● Medium blog on Logistic Regression:(10 min)
	https://medium.com/data-science-group-iitr/logistic-regression-simplified-9b4efe801389
	● Why linear regression is not good for classification? (10 min)
	● Overview of Machine learning: Logistic Regression(60 min)
	  • Sigmoid
	  • Cost Function
	  • Evaluation Metrics
	● Practice problem on Machine learning: Logistic Regression
	  • Refer the GitHub repo for problems (30 min)
	● Quiz on Machine learning: Logistic Regression. (10 min)
	● Questions and Discussion on doubts - AMA (30 min)

Context setting for code along (objectives and key takeaways) (5 min)

- Applying skills to solve a problem
  - Quiz learners on how to solve the problem posed given the concept that they have already learned. Let them come up with the approach.
  - Which data structure is best suited to capture data and calculate the result? Pose to the learner these questions.
- Adapting to something new
  - Bring attention to the learner about different formats of storing data and how to quickly search and implement how to read files stored in an unknown format to the learner.
  - How to look for help in documentation and quickly solve problems.
- Problem-solving workflow
  - Refer to Polya's How to Solve it - the broad principles of problem-solving.
  - Highlight how a hard problem can be broken down into smaller problems and the solution of the smaller problems build up as a solution to the larger problem

Code Along (120 minutes)

- Dataset overview - IPL dataset, rules of cricket
- High-level objective - what will be the outcome
- Explain the problem statement
- Engage the learner while solving the problem
  - While solving the problem pause, and question the learners if there are alternate ways of solving the problem.
  - While writing out the code, ask how to figure out in which data structure format is the data stored - use type()
  - Ask them which part of the data needs to be accessed to answer the questions posed in the code along.
- In case you fumble/are unable to get to the right answer - refer to the provided solution. Tell learners that it is ok to get stuck and how to look for help on StackOverflow, google
  - Purposefully make mistakes and ask the learners to point out the error and debug for you. Let them point out and build the basic idea for the solution.
  - Ask focused questions to gauge if learners are understanding
  - Set the expectation that errors are important of the learning process and emphasis on the importance of debugging.
  - Note questions parked if any. Resolve or answer later in slack or in the coming session

Next Session	

- Concept - Improving your model with Feature Selection(30 min)
- Key topics to be highlighted - highlight where they would need to spend more time and importance w.r.t Data Science.
    - Feature Selection Importance
    - Different types of Feature Selection Methods
    - PCA