Session Plan Day 12 Regularization

Learning Outcomes

- **Understand the intuition behind gradient descent**
- **Understand bias-variance trade-off in data**
- **Use regularization to get an optimized model**
- **Apply cross-validation and hyperparameter tuning techniques to further improve the results**

- **Regularization - Go through the concept and solve the tasks and assessments.**

Student Activities

- **Discussion with Mentor what they have learned.**
- **Overview of Regularization**
    - Gradient Descent
    - Bias-Variance Trade-off
    - Lasso and Ridge regression
    - Cross-validation and Hyperparameter tuning
- **Good blog on Gradient Descent:- https://towardsdatascience.com/gradient-descent-in-a-nutshell-eaf8c18212f0**
- **Ask learners How Cross-validation help in optimizing the model?**
- **When and where to choose L1 and L2 regularization?**
- **What's the relation of bias-variance to overfitting and underfitting?**
- **Difference between parameters and Hyper-parameters?**
- **Practice problem on Regularization**
    - Refer the GitHub repo for problems
- **Quiz on Regularization.**
- **Code Along**
- **Questions and Discussion on doubts - AMA**

- **Concept - EDA and Data Pre-processing**
- **Key topics to be highlighted - highlight where they would need to spend more time and importance w.r.t Data Science.**
    - Data Cleaning
    - Data Transformation
    - Data Exploration