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|  | **Program Name: Data Science and Machine Learning Overview** | | |
|  | **Session** | **Objectives** | **Program Structure** |
| **Part I** | **Introduction To Data Science**   1. What is Data Science ? 2. Data Science team structure 3. Data Science stages 4. Machine Learning and data science | Introduction to data science discipline as an approach to extract hidden patterns from data  Skills required in Data Science, Structure of data science team | Presentations, discussions |
| **Introduction to Machine Learning**   1. What is Machine Learning ? 2. Why Machine Learning 3. Requisites for Machine Learning | Introduce participants to machine learning concept  Applications of machine learning with examples  Pre-requisites for machine learning | Presentations, discussions,  Case studies on implementation of machine learning |
| **Preparing for ML projects**   1. Defining the objectives 2. Identifying the required data items 3. Identifying sources of data 4. Data cleansing 5. Preparing data for ML 6. **How ML is being explore in Software Engineering** | Introduce the approach to machine learning project with focus on  clarity of objectives,  identifying sources of data,  preparing data for analytics  Hadoop stack and its applications | Presentations, discussions, hands on? |
| **Introduction to Machine Learning**   1. Patterns in data 2. Supervised 3. Unsupervised machine learning 4. Challenges of machine learning | To help participants understand what patterns in data mean  To familiarize participants with the two broad classification of machine learning styles, their applicability, requirements of each type  Concepts of over fitting / under fitting and generalization | Presentations and discussion on live case studies |
| **PART II** | **Supervised Learning Methods**   1. Linear regression 2. Decision trees 3. Naive Bayesian classifiers | Introduce participants to supervised learning approach with focus on  model generation through training data  testing the model  improving the accuracy of the model  applications of supervised learning | Presentations, discussions and hands-on coding to implement a POC |
| **PART III** | **Unsupervised Learning Methods**   1. Clustering 2. Artificial Neural Networks | To explain concepts unsupervised machine learning. Introduce audience to how systems learn on their own | Presentations, discussions and demos |
| **Machine Learning Project**  To be decided | To introduce participants to recommendation engines, how online retail shops use it to maximize revenues, exceed customer expectations | Presentations, discussions and hands-on |