INTENDED AUDIENCE: Any Interested Learner

COURSE OUTLINE:

Learning analytics is a method to collect, measure, analysis and reporting of data about learners and their interactions with a learning environment. Learning analytics is applying analytics on educational data to infer the student learning process and to provide support.

Learning analytics is important course in the data era and it will help the learner to apply analytics on data from education domain and help the students to learn.

ABOUT INSTRUCTOR:
Prof. Ramkumar Rajendran is an Assistant Professor in IDP in Educational Technology at Indian Institute of Technology Bombay, Mumbai. He obtained his Ph.D. in Computer Science and Engineering from IITB-Monash Research Academy, IIT Bombay and Postdoctoral training at Vanderbilt University, USA and NEC Central Research Laboratories, Japan.

COURSE PLAN:

Week 1: Intro To Data Analytics, What is LA! Definition, Academic Analytics, and Educational Data Mining, Four Levels of Analytics, Descriptive, Diagnostic, Predictive and Prescriptive Analytics

Week 2: Data Collection from Different learning environment, Technology Enhanced Learning, Classroom and MOOC environment, Preprocessing, Ethics in Learning Analytics, Student Privacy

Week 3: Intro to Machine Learning, Supervised and Unsupervised learning, Regression, Clustering and Classification, Metrics for ML algorithms –Recall, Precision, Accuracy, F-Score and Kappa, Demo of ML algorithms using Orange

Week 4: Descriptive Analytics, Data Visualization, Data visualization using Excel, Dashboard Analytics, Dashboard of Youtube, MOOC

Week 5: Intro to iSAT, iSAT Demo with example, Diagnostic Analysis, Correlation

Week 6: Sequential Pattern Mining, SPM tool Demo, Process Mining, ProM Tool Demo

Week 7: Predictive Analytics, Modeling – Feature Selection, Linear Regression, Demo of Linear Regression using Weka

Week 8: Decision Tree, Demo of Decision Tree using Orange, Naïve Bayes algorithm, Demo of Naïve Bayes

Week 9: Clustering in predictive algorithm, K-Means clustering, Demo of K-Means clustering

Week 10: Text analytics, Words, Token, Stem and lemma, Minimum edit distance, Develop algorithm to automatically grade subjective answers, Demo of Word embedding

Week 11: Intro Multimodal Learning Analytics, Eye-gaze data collection, Affective computing, Aligning and analyzing data from Multiple sensors

Week 12: Advanced topics in LA, How to apply LA in our class, Data repos, Research papers to read, and where to present your work