Data Science Masters 2.0 (IMPACT)

PW SKILLS

Milestone	Week	Modules	Topics
PYTHON	Week 0	Course Introduction	Course Induction
			Course Overview And Dashboard Description
			Introduction Of Data Industry
			Lab Introduction
			Support System Introduction
			Community Introduction
	Week 1	Basic Building	Introduction Of Python And Comparison With Other Programming Language
			Python Objects, Number & Booleans, Strings.
			Container Objects, Mutability Of Objects
			Operators - Arithmetic, Bitwise, Comparison And Assignment Operators, Operator's Precedence And Ass
			Conditions (If Else, If-Elif-Else), Loops (While, For)
			Break And Continue Statement And Range Function
	Week 2	Data Structures	Basic Data Structure In Python
			String Object Basics
			String Inbuilt Methods
			Splitting And Joining Strings
			String Format Functions
			List Methods
			List As Stack And Queues
			List Comprehensions
			Tuples, Sets & Dictionary Object Methods
			Dictionary Comprehensions
			Dictionary View Objects
	Week 3	Function	Functions Basics, Parameter Passing, Iterators.
			Generator Functions
			Lambda Functions
			Map, Reduce, Filter Functions.
	Week 4	Oops Concepts	Oops Basic Concepts.
			Creating Classes
			Pillars Of Oops
			Inheritance
			Polymorphism
			Encapsulation
			Abstraction
			Decorator
			Class Methods And Static Methods
			Special (Magic/Dunder) Methods
			Property Decorators - Getters, Setters, And Deletes
	Week 5	s & Exception Handling & Memory Mangem	Working With Files
			Reading And Writing Files
			Buffered Read And Write
			Other File Methods.
			Logging, Debugger
			Modules And Import Statements
			Exceptions Handling With Try-Except
			Custom Exception Handling
			List Of General Use Exception
			Best Practice Exception Handling
			Multithreading
			Multiprocessing
	Week 6	Connecting with Databases & APIs	Connecting Python with Mysql
			Connecting Python with MongoDb
			What Is Web Api
			Difference B/W Api And Web Api
			Rest And Soap Architecture
			Restful Services
			Flask Introduction
			Flask Application
			Open Link Flask
			App Routing Flask
			Url Building Flask
			Http Methods Flask
			Templates Flask
			Flask Project: Hello World
			Working with Postman
Python Test			Python Test
			Python Pandas - Series
			Python Pandas – Data Frame

ML TOOLBOX	Week 8	Pandas	Python Pandas – Panel
			Python Pandas - Basic Functionality
			Reading Data From Different File System
			Python Pandas – Re Indexing Python
			Pandas – Iteration
			Python Pandas – Sorting.
			Working With Text Data Options & Customization
			Indexing & Selecting
			Data Statistical Functions
			Python Pandas - Window Functions
			Python Pandas - Date Functionality
			Python Pandas –Time Delta
			Python Pandas - Categorical Data
			Python Pandas – Visualization
			Python Pandas - Tools
	Week 9	Numpy & Visulaization	Numpy - Nd Array Object.
			Numpy - Data Types.
			Numpy - Array Attributes.
			Numpy - Array Creation Routines.
			Numpy - Array From Existing.
			Data Array From Numerical Ranges.
			Numpy - Indexing & Slicing.
			Numpy – Advanced Indexing.
			Numpy – Broadcasting.
			Numpy - Iterating Over Array.
			Numpy - Array Manipulation.
			Numpy - Binary Operators.
			Numpy - String Functions.
			Numpy - Mathematical Functions.
			Numpy - Arithmetic Operations.
			Numpy - Statistical Functions.
			Sort, Search & Counting Functions.
			Numpy - Byte Swapping.
			Numpy - Copies &Views.
			Numpy - Matrix Library.
			Numpy - Linear Algebra
			Matplotlib
			Seaborn
			Plotly
			Bokeh
ANDAS & Visualization Test			NUMPY, PANDAS & Visualization Test
	Week 10	Statistics Basic	Introduction To Basic Statistics Terms
			Types Of Statistics
			Types Of Data
			Levels Of Measurement
			Measures Of Central Tendency
			Measures Of Dispersion
			Random Variables
			Set
			Skewness
			Covariance And Correlation
	Week 11	Statistics Advance - 1	Probability Density/Distribution Function
			Types Of The Probability Distribution
			Binomial Distribution
			Poisson Distribution
			Normal Distribution (Gaussian Distribution)
			Probability Density Function And Mass Function
			Cumulative Density Function
			Examples Of Normal Distribution
			Bernoulli Distribution
			Uniform Distribution
			Z Stats
			Central Limit Theorem
			Estimation
			A Hypothesis
			Hypothesis Testing'S Mechanism
			P-Value
			T-Stats
			Student T Distribution
			T-Stats Vs. Z-Stats: Overview
			When To Use A T-Tests Vs. Z-Tests
			Type 1 & Type 2 Error
			Bayes Statistics (Bayes Theorem)
			Confidence Interval(Ci)

Statistics	Week 12	Statistics Advance - 2	Confidence Intervals And The Margin Of Error
			Interpreting Confidence Levels And Confidence Intervals
			Chi-Square Test
			Chi-Square Distribution Using Python
			Chi-Square For Goodness Of Fit Test
			When To Use Which Statistical Distribution?
			Analysis Of Variance (Anova)
			Assumptions To Use Anova
			Anova Three Type
			Partitioning Of Variance In The Anova
			Calculating Using Python
			F-Distribution
			F-Test (Variance Ratio Test)
			Determining The Values Of F
			F Distribution Using Python
STATISTICS TEST			**STATISTICS TEST**
	Week 13	ıction To Machine Learning & Feature Engir	Train, Test, Validation Split
			Supervised, Unsupervised, Semi-Supervised, Reinforcement Learning
			Performance
			Overfitting, Under Fitting
			Bias Vs Variance
			Handling Missing Data
			Handling Imbalanced Data
			Up-Sampling
			Down-Sampling
			Smote
			Data Interpolation
			Handling Outliers
			Filter Method
			Wrapper Method
			Embedded Methods
			Feature Scaling
			Standardization
			Mean Normalization
			Min-Max Scaling
			Unit Vector
			Feature Extraction
			Pca (Principle Component Analysis)
			Data Encoding
			Nominal Encoding
			One Hot Encoding
			One Hot Encoding With Multiple Categories
			Mean Encoding
			Ordinal Encoding
			Label Encoding
			Target Guided Ordinal Encoding
			Covariance
			Correlation Check
			Pearson Correlation Coefficient
			Spearman'S Rank Correlation
			Vif
	Week 14	Exploratory Data Analysis	Feature Engineering And Selection.
			Analyzing Bike Sharing Trends.
			Analyzing Movie Reviews Sentiment.
			Customer Segmentation And Effective Cross Selling.
			Analyzing Wine Types And Quality.
			Analyzing Music Trends And Recommendations.
			Forecasting Stock And Commodity Prices
	Week 15	Linear Regression & Logistic Regression	Linear Regression
			Gradient Descent
			Multiple Linear Regression
			Polynomial Regression
			R Square And Adjusted R Square
			Rmse , Mse, Mae Comparison
			Regularized Linear Models
			Ridge Regression
			Lasso Regression
			Elastic Net
			Complete End-To-End Project With Deployment On Cloud And Ui
			Logistics Regression In-Depth Intuition
			In-Depth Mathematical Intuition
			In-Depth Geometrical Intuition
			Hyper Parameter Tuning

			Grid Search Cv
			Randomize Search Cv
			Data Leakage
			Confusion Matrix
			Precision,Recall,F1 Score ,Roc, Auc
			Best Metric Selection
			Multiclass Classification In Lr
			Complete End-To-End Project With Deployment In Multi Cloud Platform
	Week 16	**Feature Selection, Decision Tree & SVMS**	Feature Selection
			Recursive Feature Elimination
			Backward Elimination
			Forward Elimination
			Decision Tree Classifier
			In-Depth Mathematical Intuition
			In-Depth Geometrical Intuition
			Confusion Matrix
			Precision, Recall,F1 Score ,Roc, Auc
			Best Metric Selection
			Decision Tree Repressor
			In-Depth Mathematical Intuition
			In-Depth Geometrical Intuition
			Performance Metrics
			Complete End-To-End Project With Deployment In Multi Cloud Platform
			Linear Svm Classification
			In-Depth Mathematical Intuition
			In-Depth Geometrical Intuition
			Soft Margin Classification
			Nonlinear Svm Classification
			Polynomial Kernel
			Gaussian, Rbf Kernel
			Data Leakage
			Confusion Matrix
			Precision, Recall,F1 Score ,Roc, Auc
			Best Metric Selection
			Svm Regression
			In-Depth Mathematical Intuition
			In-Depth Geometrical Intuition
			Complete End-To-End Project With Deployment
	Week 17	**Naïve Bayes & Ensemble Techniques**	Bayes Theorem
			Multinomial Naïve Bayes
			Gaussian Naïve Bayes
			Various Type Of Bayes Theorem And Its Intuition
			Confusion Matrix
			Precision ,Recall,F1 Score ,Roc, Auc
			Best Metric Selection
			Complete End-To-End Project With Deployment
			Definition Of Ensemble Techniques
			Bagging Technique
			Bootstrap Aggregation
			Random Forest (Bagging Technique)
			Random Forest Repressor
			Random Forest Classifier
			Complete End-To-End Project With Deployment
			Boosting Technique
			Ada Boost
			Gradient Boost
			Xgboost
			Complete End-To-End Project With Deployment
	Week 18	**KNN & Dimensionality Reduction**	Knn Classifier
			Knn Repressor
			Variants Of Knn
			Brute Force Knn
			K-Dimension Tree
			Ball Tree
			Complete End-To-End Project With Deployment
			The Curse Of Dimensionality
			Dimensionality Reduction Technique
			Pca (Principle Component Analysis)
			Mathematics Behind Pca
			Scree Plots
			Eigen-Decomposition Approach
			Practicals
			Clustering And Their Types
			K-Means Clustering

	Week 19	Clustering	K-Means++
			Batch K-Means
			Hierarchical Clustering
			Dbscan
			Evaluation Of Clustering
			Homogeneity, Completeness And V-Measure
			Silhouette Coefficient
			Davies-Bouldin Index
			Contingency Matrix
			Pair Confusion Matrix
			Extrinsic Measure
			Intrinsic Measure
			Complete End-To-End Project With Deployment
	Week 20	Anomaly Detection & Time Series	Anomaly Detection Types
			Anomaly Detection Applications
			Isolation Forest Anomaly Detection Algorithm
			Density-Based Anomaly Detection (Local Outlier Factor) Algorithm
			Support Vector Machine Anomaly Detection Algorithm
			Dbscan Algorithm For Anomaly Detection
			Complete End-To-End Project With Deployment
			What Is A Time Series?
			Old Techniques
			Arima
			Acf And Pacf
			Time-Dependent Seasonal Components.
			Autoregressive (Ar),
Machine Learning			Moving Average (Ma) And Mixed Arma- Modeler.
HINE LEARNING TEST			MACHINE LEARNING TEST
	Week 24	Deep Learning Neural Networks & Setup	Neural Network Overview And Its Use Case.
			Detail Mathematical Explanation
			Various Neural Network Architect Overview.
			Use Case Of Neural Network In Nlp And Computer Vision.
			Activation Function -All Name
			Multilayer Network.
			Loss Functions. - All 10
			The Learning Mechanism.
			Optimizers. - All 10
			Forward And Backward Propagation.
			Weight Initialization Technique
			Vanishing Gradient Problem
			Exploding Gradient Problem
			Visualization Of Neural Network
			Colab Pro Setup
			TensorFlow Installation 2.0 .
			TensorFlow 2.0 Function.
			TensorFlow 2.0 Neural Network Creation.
			Mini Project In TensorFlow.
			Tensor space
			Tensor board Integration
			TensorFlow Playground
Deep Learning			Netron
EP LEARNING TEST			DEEP LEARNING TEST
	Week 25	onvolution Neural Networks & Architecture	Pytorch Installation.
			Pytorch Functional Overview.
			Pytorch Neural Network Creation.
			Cnn Fundamentals
			Cnn Explained In Detail - Cnnexplainer, Tensor space
			Various Cnn Based Architecture
			Training Cnn From Scratch
			Building Webapps For Cnn
			Deployment In Aws, Azure & Google Coud
			Various Cnn Architecture With Research Paper And Mathematics
			Lenet-5 Variants With Research Paper And Practical
			Alexnet Variants With Research Paper And Practical
			Googlenet Variants With Research Paper And Practical
			Transfer Learning
			Vggnet Variants With Research Paper And Practical
			Resnet Variants With Research Paper And Practical
			Inception Net Variants With Research Paper And Practical
			FASTER RCNN
			YOLO
			Introduction To Yolov5
			Installation Of Yolov5
			Data Annotation & Preparation

	Week 26	**Object Detection**	Download Data & Configure Path
			Download & Configure Pretrained Weight
			Start Model Training
			Evaluation Curves Yolov5
			Inferencing Using Trained Model
			Introduction To Yolov6
			Installation Of Yolov6
			Data Annotation & Preparation
			Download Data & Configure Path
			Download & Configure Pretrained Weight
			Start Model Training
			Evaluation Curves Yolov6
			Inferencing Using Trained Model
			Introduction To Yolov7
			Installation Of Yolov7
			Data Annotation & Preparation
			Download Data & Configure Path
			Download & Configure Pretrained Weight
			Start Model Training
			Evaluation Curves Yolov7
			Inferencing Using Trained Model
			Introduction To Detecron2
			Installation Of Detecron2
			Data Annotation & Preparation
			Download Data & Configure Path
			Download & Configure Pretrained Weight
			Start Model Training
			Evaluation Curves Detecron2
			Inferencing Using Trained Model
			Introduction To TFOD2
			Installation Of TFOD2
			Data Annotation & Preparation
			Download Data & Configure Path
			Download & Configure Pretrained Weight
			Start Model Training
			Evaluation Curves TFOD2
			Inferencing Using Trained Model
	Week 27	**Image Segmentation**	Scene Understanding
			More To Detection
			Need Accurate Results
			Segmentation
			Types Of Segmentation
			Understanding Masks
			Maskrcnn
			From Bounding Box To Polygon Masks
			Mask Rcnn Architecture
			Introduction To Detectron2
			Our Custom Dataset
			Doing Annotations Or Labeling Data
			Registering Dataset For Training
			Selection Of Pretrained Model From Model Zoo
			Let's Start Training
			Stop Training Or Resume Training
			Inferencing Using The Custom Trained Model In Colab
			Evaluating The Model
	Week 28	**Advanced Computer Vision**	What Is Face Recognition?
			Evolution Of Face Recognition
			Face Recognition Pipeline
			Data Preprocessing
			Face Detection
			Face Alignment
			Face Identification
			Exploring Face net
			Exploring Mtcnn
			Exploring Arc face
			Data Preprocessing
			Face Detection
			Face Alignment
			Face Identification
			Combining All Pipelines
			Building A Desktop App With Tkinter
			What Is Object Tracking?
			Localization
			Motion

			Flow Of Optics
			Motion Vector
			Tracking Features
			Exploring Deep Sort
			Bytetrack
			Data Preprocessing
			Using Yolo For Detection
			Preparing Deep sort With Yolo
			Combining Pipelines For Tracking & Detection
			Introduction To Gans
			Gan Architecture
			Discriminator
			Generator
			Controllable Generation
			Wgans
			Dcgans
			Stylegans
Computer Vision			Gan Practical's Implementation
MPUTER VISION TEST			**COMPUTER VISION TEST**
	Week 31	**NLP Introduction & Text Processing**	Overview Computational Linguistic.
			History Of Nlp.
			Why Nlp
			Use Of Nlp
			Web Scrapping.
			Text Processing
			Understanding Regex
			Text Normalization
			Word Count.
			Frequency Distribution
			String Tokenization
			Annotator Creation
			Sentence Processing
			Lemmatization In Text Processing
			Word Embedding
			Co-Occurrence Vectors
			Word2Vec
			Doc2Vec
	Week 32	**Useful NLP Libraries & Networks**	Nltk
			Text Blob
			Stanford Nlp
			Recurrent Neural Networks.
			Long Short Term Memory (Lstm)
			Bi Lstm
			Stacked Lstm
			Gru Implementation
	Week 33	**ntion Based Model & Transfer Learning In**	Seq 2 Seq.
			Encoders And Decoders.
			Attention Mechanism.
			Attention Neural Networks
			Self-Attention
			Introduction To Transformers.
			Bert Model.
NLP			Gpt2 Model.
NLP TEST			**NLP TEST**
	Week 36	**Big Data Introduction, Haddop & Spark**	What Is Big Data?
			Big Data Application
			Big Data Pipeline
			Hadoop Introduction
			Hadoop Architecture
			Hadoop Setup And Installation
			Spark
			Spark Overview.
			Spark Installation.
			Spark Rdd.
			Spark Data Frame.
			Spark Architecture.
			Spark Ml Lib
			Spark Nlp
			Spark Linear Regression
			Spark Logistic Regression
			Spark Decision Tree
			Spark Naive Bayes
			Spark Xg Boost.
			Spark Time Series

Big Data	Week 37	Spark & Kafka	Spark Deployment In Local Server
			Spark Job Automation With
			Scheduler
			Kafka Introduction
			Kafka Installation
			Spark Streaming
			Spark With Kafka
BIG DATA TEST			BIG DATA TEST
	Week 38	Tableau - 1	Talking About Business Intelligence
			Tools And Methodologies Used In Bi
			Why Visualization Is Getting More Popular
			Why Tableau?
			Gartner Magic Quadrant Of Market Leaders
			Future Business Impact Of Bi
			Tableau Products
			Tableau Architecture
			Bi Project Execution
			Tableau Installation In Local System
			Introduction To Tableau Prep
			Tableau Prep Builder User Interface
			Data Preparation Techniques Using Tableau Prep Builder Tool
			How To Connect Tableau With Different Data Source
	Week 39	Tableau - 2	Visual Segments
			Visual Analytics In Depth
			Filters, Parameters & Sets
			Tableau Calculations Using Functions
			Tableau Joins
			Working With Multiple Data Source (Data Blending)
			Building Predictive Models
			Dynamic Dashboards And Stories
			Sharing Your Reports
			Tableau Server
			User Security
			Scheduling
	Week 40	PowerBI - 1	Power Bi Introduction And Overview
			Key Benefits Of Power Bi
			Power Bi Architecture
			Power Bi Process
			Components Of Power Bi
			Power Bi - Building Blocks
			Power Bi Vs Other Bi Tools
			Power Installation
			Overview Of Power Bi Desktop
			Data Sources In Power Bi Desktop
			Connecting To A Data Sources
			Query Editor In Power Bi
			Views In Power Bi
			Field Pane
			Visual Pane
			Custom Visual Option
			Filters
			Introduction To Using Excel Data In Power Bi
			Exploring Live Connections To Data With Power Bi
			Connecting Directly To Sql Azure, Hd Spark, Sql Server Analysis Services/ My Sql
			Import Power View And Power Pivot To Power Bi
			Power Bi Publisher For Excel
			Content Packs
			Introducing Power Bi Mobile
			Power Query Introduction
			Query Editor Interface
			Clean And Transform Your Data With Query Editor
	Week 41	PowerBI - 2	Data Type
			Column Transformations Vs Adding Columns
			Text Transformations
			Cleaning Irregularly Formatted Data -Transpose
			Date And Time Calculations
			Advance Editor: Use Case
			Query Level Parameters
			Combining Data – Merging And Appending
			Data Modelling
			Calculated Columns
			Measures/New Quick Measures
			Calculated Tables
			Optimizing Data Models

			Row Context Vs Set Context
			Cross Filter Direction
			Manage Data Relationship
			Why Is Dax Important?
			Advanced Calculations Using Calculate Functions
Data Analytics			Dax Queries
ER BI & TABLEAU TEST			POWER BI & TABLEAU TEST
	Week 42	Resume & Interview Preparation For Jobs	Resume Templates For Fresher's
			Resume Templates For 2-4 Years Experience
			Resume Templates For 5-8 Years Experience
			Resume Templates For 10+ Years Experience
			Interview Preparation For Python
			Interview Preparation For Statistics
			Interview Preparation For Machine Learning
			Interview Preparation For Computer Vision
			Interview Preparation For Nlp
	Week 43	Profile Building & Apply Jobs	GitHub
			LinkedIn
			Naukri
Job Preparation			Monster
		PROJECTS	
	Week 7	Python Project :- Web Scrapping	Web Scrapping introduction
			Integration With Web Portal.
			Integration With Rest Api, Web Portal And Mongo Db
			Deployment On Web Portal On Aws , Azure , Aws
		Python Project : - Image Scrapper	Image Scrapping Introduction
			Image Scrapping Deployment
			Integration With Rest Api, Web Portal And Mongo Db
			Deployment On Web Portal On Aws , Azure , Aws
	Week 22 -23	ML Projects	Fault detection in wafers based on sensor data.
			Cement strength reg.
			Credit card fraud.
			Forest cover classification.
			Fraud detection.
			Income prediction.
			Mushroom classifier.
			phishing classifier
			Thyroid detection.
			Visibility climate
	Week 29 -30	Computer Vision Projects	Object Tracking Project
			Image Classification with SOTA CNNs
			Image to Text using OCRs
			Vision based Attendance System
			Sign Language Detection
			Shredder Systems
	Week 34 -35	NLP Projects	Movie Review using BERT
			NER using BERT
			POS Tagging with BERT
			Text Generation GPT2
			Question Answering with SQUAD
			Machine Translation with Transformers
			Paraphrasing with BART
			Text2Speech
			Speech2Text
Projects			SpellCorrector