## Artificial Intelligence in Medicine Master's Course with Real time Projects

**Onsite Corporate/Individual Training**

IQ INTELLIGENCE is a fast-growing professional training provider that is offering classroom and online training in over 20 most sought-after tools and technologies. We have a learner base in Canada and USA. We help organizations to maximize the impact of our trainings by customizing the curriculum to make sure we cover the topics relevant to your group. We help fast learn the skills within days where it you can start applying the new tools as soon as possible.

IQ INTELLIGENCE offers a comprehensive Artificial Intelligence Master's course to become a certified Artificial Intelligence in Medicine Engineer. This training will help you learn various aspects of Medical artificial intelligence (AI) mainly uses computer techniques to perform clinical diagnoses and suggest treatments. AI has the capability of detecting meaningful relationships in a data set and has been widely used in many clinical situations to diagnose, treat, and predict the results. The purpose of this special course is to demonstrate the potential of several intelligent approaches in medical informatics technologies and applications. Submissions for this special course should be original work that deals in some manner with topics relevant to medical artificial intelligence, expert systems, data mining, machine learning, and image processing. The main focus of this course will be on the proposal of techniques for medical artificial intelligence, expert systems, data mining, machine learning, and image processing which could be built on top of them.

Artificial intelligence (AI) aims to mimic human cognitive functions. It is bringing a paradigm shift to healthcare, powered by increasing availability of healthcare data and rapid progress of analytics techniques. We survey the current status of AI applications in healthcare and discuss its future. AI can be applied to various types of healthcare data (structured and unstructured). Popular AI techniques include machine learning methods for structured data, such as the classical support vector machine and neural network, and the modern deep learning, as well as natural language processing for unstructured data. Major disease areas that use AI tools include cancer, neurology and cardiology. We then review in more details the AI applications in stroke, in the three major areas of early detection and diagnosis, treatment, as well as outcome prediction and prognosis evaluation. We conclude with discussion about pioneer AI systems, such as IBM Watson, and hurdles for real-life deployment of AI.

Potential Contents include but are not limited to the following:

- Artificial intelligence techniques in medicine
- Data mining and knowledge discovery in medicine
- Medical expert systems
- Machine learning-based medical systems
- Medical signal and image processing techniques

**Key Features of IQ INTELLIGENCE Training:**

- **Instructor Led Classroom Training/ Online/Self study**

**Prerequisites:** You don't need any specific knowledge to learn AI. A basic knowledge of programming & Science background can help

**Learning Objectives:**

The objective of the course is to present an overview of artificial intelligence (AI) in medicine principles and approaches. Develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents: Search, Knowledge representation, inference, logic, and learning.

This is an Artificial Intelligence Engineer Master Course that is a comprehensive learning approach for mastering the domains of Artificial Intelligence, Data Science, Business Analytics, Business Intelligence, Python coding, and Deep Learning with TensorFlow. Upon completion of the training, you will be able to take on challenging roles in the artificial intelligence domain.

**Course includes:** This course will include extensive hands-on activities to re-enforce the skillsand knowledge attained.

**Course Outline:**

**Python for Data Science (AI) Course Contents**

**Learning Objective**

This course lets you master the concepts of widely-used and powerful programming language Python. You will gain hands-on experience in working with the various Python packages like SciPy, NumPy, MatPlotLib, Lambda functions and more. You will work on hands-on projects in the domain of pythonand apply it for various domains of big data, data science and machine learning.

- Basic constructs of Python language
- Writing Object Oriented Programin Python and connecting withDatabase
- File Handling, Exception Handlingin Python
- Mathematical Computing withPython (NumPy)
- Scientific Computing with Python(SciPy)

- Data Visualization (Matplotlib)
- Data Analysis and Machine Learning(Pandas) / Data Manipulation withPython
  Machine Learning, Natural Language
- Processing (Scikit-Learn)
- Web Scraping for Data Science
- Python on Hadoop
- Writing Spark code using Python

**Introduction To Python**

- Installing Python On Your Machine
- Variables In Python
- Operators In Python
- Datatype In Python
- Flow Control In Python
- Functions In Python
- File Handling In Python
- Object And Classes In Python
  Getting Started With Python

**Concept Of Oops In Python**

- Introduction To Oops
- Concept Of Classes And Object
- Demo Test – Solution
- Concept Of Inheritance In Python
- Concept Of Encapsulation In Python
- Concept Of Polymorphism In Python

**Introduction ToNumpy**

- Initializing A Numpy Array
- Inspecting A Numpy Array
- Performing Mathematical Functions Using Numpy
- Numpy Array Manipulation
- Indexing And Slicing Using Numpy

- Numpy Vs List
- Scipy Introduction
- Sub Package Cluster

**Data Manipulation Using Pandas**

- Introduction To Pandas
- Series Object In Pandas
- Data frame In Pandas
- Merge, Join And Concatenate
- Importing And Analyzing Dataset
- Cleaning The Dataset
- Manipulating The Dataset
- Visualizing The Data Sets

**Data Visualization Using Matplotlib**

- What Is Data Visualization?
- Introduction To Matplotlib
- How To Create A Line Plot?
- How To Create A Bar Plot?
- How To Create A Scatter Plot?
- How To Create A Histogram?
- How To Create A Box And Violin Plot
- How To Create A Pie Chart And Doughnut Chart

  How To Create A Area Chart

**Machine Learning Using Python**

- Introduction To Machine Learning
- Types Of Machine Learning
- What Can You Do With Machine Learning?
- Machine Learning Demo
- Machine Learning Using Python

**Supervised Learning Algorithm In Python**

- Introduction To Regression

- Step By Step Calculation Of Linear Regression
- Linear Regression In Python
- Step By Step Calculation Of Logistic Regression
- What Is Classification?
- Step By Step Calculation Of Decision Tree
- Confusion Matrix
- Step By Step Calculation Of Naive Bayes Algorithm

**Unsupervised Learning**

- What Is Clustering ?
- Step By Step K Means Clustering
- Unsupervised Learning

**Advanced Topics**

- Lecture 1 – Natural Language Processing

**Python For Data Science (AI) Projects& Assignments:**

**Project 1 :** Analyzing the naming pattern using Python

**Project 2 :**Python Web Scraping for Data Science

**Project 3 :** Predicting customer churn in Banking Company

**Project 4 :** Server logs/Firewall logs

Python-Interview-Question-answer

**Assignment 1 –** Introduction To Python

**Assignment 2–** Concept Of Oops

**Assignment 3**– Numpy

**Assignment 4–** Pandas

**Assignment 5–** Data Visualization Using Matplotlib

**Assignment 6–** Supervised Learning

**Data Science (AI) with R Course Contents**


**Learning Objective**

This will help you be master in Data Manipulation with R programming, Data visualization, advance analytics topics like regressions, data mining using RStudio. You will work on real life projects and assignments to master data analytics.

- Introduction to Data Science and Statistical Analytics
- Introduction to R
- Data Exploration, Data Wrangling and R Data Structure
- Data Visualization
- Introduction to Statistics
- Predictive Modeling - 1 ( Linear regression)
- Predictive Modeling - 2 ( Logistic Regression)
- Decision Trees
- Random Forest
- Unsupervised learning
- Association Analysis and Recommendation engine
- Sentiment Analysis
- Time Series

**Machine Learning (AI) Course Contents**

**Learning Objective:**

This course will help you to learn & master the concepts and techniques ofmachine learning algorithms, supervised and unsupervised learning, probability,statistics, decision tree, random forest, linear and logistic regression throughreal-world hands-on projects. This Machine Learning certification course trainingcan be taken by anybody to become a successful Machine Learning engineer.

- Introduction to Machine Learning
- Various techniques of Machine Learning
- Mathematics of Machine Learning
- Preprocessing of data
- Supervised learning techniques
- Introduction to regression
- Techniques of classification




- Unsupervised Learning
- Introduction to Deep Learning
- Introduction To Statistics
- Central Tendency
- Probability
- Machine Learning
- Co-Variance And Correlation
- Machine Learning Models
- Linear Regression
- Logistics  Regression
- Glm Function
- Roc Curve
- Decision Tree
- Gini Index
- Random Forest

**Machine Learning (AI) project work**

Project 1 –Bank Account Recommendation

**Artificial Intelligence and Deep Learning (AI) Course Contents**

**Learning Objective**

This training course offers the comprehensive Deep Learning training that will help you to work on the cutting-edge of artificial intelligence. As part of the training you will master the various aspects of artificial neural networks, supervised and unsupervised learning, logistic regression with neural network mindset, binary classification, vectorization, Python for scripting machine learning applications.

- Introduction to Neural Networks
- Multi-layered Neural Networks
- Regularization techniques (L1, l2)
- CNN: Convolutional Neural Networks
- LSTM: Long Short Term Memory
- Hidden Markov




- Chatbots
- Deep Learning And AI
- Tensor Flow
- Machine Learning Basic Concepts
- Regression
- Normalization
- Data Set
- Spark Tensor Flow
- Logistic Regression
- Linear Regression V/S Logistic Regression
- Activation Function
- Creating Module
- Neural Network Equation
- Sigmoid Function
- Multi Layer Perception
- Multi Neural Network And Back Propagation
- Back Propagation tensor Flow
- Uniform Distribution
- Model Making
- Convolution Neural Networks
- Parameter Sharing
- Hyper Parameter
- Drop Out Layer
- Training The Model
- Save Trained Model
- Tensorflow Library
- Optimization Functions
- Recurrent Neural Network
- Matrix Multiplication

**Artificial Intelligence and Deep Learning (AI) project work**

Project 1 – Creating A Deep Learning Model Using Tensorflow

**Tableau ForArtificial Intelligence(AI) Course Content**

**Filtering, Sorting & Grouping** - Filtering, Sorting and Grouping are fundamental conceptswhen working with and analyzing data. We will briefly review these topics as they apply toTableau

- Advanced options for filtering and hiding
- The various types of filters and how and when each executes in sequence
- Data security considerations of specific filters
- Specific recommendations on how to use, or not to use, various filter options
- Understanding your many options for ordering and grouping your data: Sort,Groups, Bins, Sets
- The various types of sets and use cases for each
- Understanding how these options inter-relate

**Working with Data**– In the Fundamentals class, we accepted the data for what it is! (witha basic overview of blending and joining data and working with the data engine). In the Advancedclass, we will understand the difference between joining and blending data, and when we shoulddo each. We will also consider the implications of working with large data sets, and consideroptions for when and how to work with extracts and the data engine. We will also investigatebest practices in “sharing” data sources for Tableau Server users.

- Working with the Data Engine / Extracts and scheduling extract updates
- Working with Custom SQL
- Adding to Context
- Switching to Direct Connection
- Building meta data via shared Data Source connections
- Performance considering and working with big data

**Working with Calculated Data and Statistics**– In the Fundamentals Class, we wereintroduced to some basic calculations: basic string and arithmetic calculations and ratios andquick table calculations. In the Advanced class, we will extend those concepts to understandthe intricacies of manipulating data within Tableau

- A Quick Review of Basic Calculations
  - Arithmetic Calculations
  - String Manipulation
  - Date Calculations

  - Quick Table Calculations
  - Custom Aggregations
  - Custom Calculated Fields
  - Logic and Conditional Calculations
  - Conditional Filters
- Advanced Table Calculations
  - Understanding Partioning and Addressing
  - Differences between visual layout of data and results of table calculations
  - Approaches for understanding what is happening in table calculations
  - Calculate on Results of Table Calculations
  - Complex Calculations
  - Difference from Average
  - Secondary Table Calculations
- Understanding where Calculations Occur
- Statistics
  - Reference / Trend Lines
  - Statistical Calculations
  - Summary Stats
  - Cohort Analysis
  - Moving Averages
    - From a fixed point
    - In a rolling window
- Working with Dates and Times
  - Continuous versus Discrete Dates
  - Dates and Times
  - Reference Dates

**Building Advanced Chart Types and Visualizations / Tips & Tricks**– This topic covershow to create some of the chart types and visualizations that may be less obvious in Tableau. Italso covers some of the more common tips & tricks / techniques that we use to assist customersin solving some of their more complex problems.

- Pareto Chart
- Spark Line

- Horizon Chart

**Best Practices in Formatting and Visualizing**

- Formatting Tips
  - Highlighting
  - Labeling
  - Legends
- Introduction to Visualization Best Practices

**Building Better Dashboards**– In the Fundamentals courses, we learned how we cancombine several worksheets in a dashboard and publish that to the web. In the Advancedcourse, we will learn how to build effective and interactive applications via dashboarding.

- Guided Analytics
  - Cascading Filters
  - Highlighting
  - Quick filter Options
  - URL Actions

**Overview – Working with Tableau Server**– In Tableau Fundamentals, we saw that wecould use Tableau Server as a mechanism to share our visualizations and dashboards. Nowwe will dig in a bit deeper.

- Publishing to Tableau Server – Overview of publishing, scheduling & security options
- Tableau Server Usage – Interacting with Published Visualizations

**Wrap Up Activities**

- Summary of what we have learned
- Advanced activities to pull together and solidify the concepts

**Where to get Further Assistance**

- The Help File / Product Manual
- Knowledge base
- Forums
- Whitepapers & Books
- Further Training Offerings & Professional Services
- Technical Support

## Project Works & Assignments

| Course | Industry/Domain | Project |
|---|---|---|
| Data Science with R | E-commerce | Cold Start Problem in Data Science |
| | Enter | Recommendation for Movie, Summary |
| | E-commerce | Making sense of customer online buying pattern |
| | Banking and Finance | Fraud Detection in Banking System |
| Python for Data Science | E-commerce | Python Web Scraping for Data Science |
| | General | Create a password generator |
| | Finance | Impact of pre-paid plans on the preferences of investors |
| | Stock Market | Machine Learning – Prediction of stock prices |
| | IT | Server logs/Firewall logs |
| AI Deep Learning Projects | Internet Search | Image recognition with TensorFlow |
| | General | Building an AI-based chatbot |
| | E-commerce | E-commerce product recommendation |