

Advanced Julia for Data Analytics

Duration: 24 Hours (3 Days)

Overview

The Advanced Julia for High-Performance Computing and Data analytics certification focuses on mastering the use of Julia, a high-level programming language designed for high-performance numerical and Scientific computing. It explores advanced concepts like Parallel computing, distributed computing, and sophisticated Data analytics. Industries use it to increase computational efficiency, manage large datasets, and enhance machine learning algorithms. Julia allows for rapid development, execution speed, and the ability to call functions from Python, C, and Fortran libraries. This certification showcases proficiency in advanced computing tasks, a valuable asset in fields like data science, finance, biology, and engineering, which rely heavily on Data analytics and computational speed.

Audience Profile

Experienced Julia programmers aiming to enhance their skills

Data analysts and scientists seeking to adopt Julia for high-performance computing

Developers from other languages wanting to transition to Julia

Students pursuing advanced studies in data analytics

IT professionals interested in high-performance computing

Course Syllabus

Module 01: Introduction to Julia Programming

- 1 Rationale Behind Learning Julia
- 2 Introduction and Setting Up Your Julia Environment
- 3 Variables and Inputs
- 4 Conditions and Iterations
- 5 Arrays and Dictionaries
- 6 Functions
- 7 File Handling
- 8 Package management

Module 02: Advantages of Modern IDE

- 1 Julia in Visual Studio Code
 - Precompiled packages, Performance-focused optimizations, Curated package selection, Support for Julia-specific tools, Performance-oriented development workflow
- Visual Studio Code
 - multi-language support, Cross-platform compatibility, Seamless Integration

Module 03: Data Manipulation and Analysis

- 1 Introduction to DataFrames.jl
- 2 Importing and exporting data
- 3 Data cleaning
- 4 Data transformation

Module 04: Data Visualization

- 1 Introduction to Data Visualization
- 2 Types of Plots
- 3 Data visualization with Plots.jl
- 4 Case Studies

Module 05: Machine Learning Basics

- 1 Introduction to Machine Learning
- 2 Types of Machine Learning
- 3 Feature engineering
- 4 Model selection and evaluation
- 5 Cross-validation
- 6 Regularization

Module 06: Supervised Learning

- 1 Linear regression
- 2 Logistic regression
- 3 Decision trees
- 4 Random forests
- 5 Gradient Boosting
- 6 Support Vector Machines

Module 07: Unsupervised Learning

- 1 Clustering
- 2 K-Means
- 3 Hierarchical clustering
- 4 Principal Component Analysis
- 5 Non-negative Matrix Factorization