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Sign up

JULIA TRAINING: Data Science

3 days (21 hours)

Presentation

Julia is a high-performance, dynamic computer language, which is why it is one of the most popular for scientific computing. Created by MIT, its aim is to combine all the advantages found in modern languages such as Matlab, R, Scilab, Python... in a single language! It provides a powerful compiler, a dynamic type system with parameterized polymorphism, distributed parallel execution and direct function calls in C, Fortran and Python.

This training course will give you the knowledge you need to program with the Julia language. It will cover its syntax, tools and good development practices, so that you can benefit from all the advantages of this new language. We'll present the libraries, functionalities such as database access, statistics manipulation and scientific calculations. But also more advanced topics such as meta-programming.

On the other hand, we have specially designed several workshops to provide you with an in-depth introduction to Machine Learning and artificial intelligence through the Julia language. In this part you'll discover vector and network operations through the new Julia language, followed by an introduction to techniques & automated learning through the concept of Machine Learning. The course then moves on to an in-depth introduction to neural network concepts. This section involves the learner in several AI applications, including handwriting recognition, object detection, language modeling and text generation.

In this training, as in all our training courses, we'll be using the latest stable version, [Julia 1.6](#).

Objectives

- Mastering Julia language syntax
- Acquire the essential notions of programming

- Knowledge of advanced functionalities and concepts in Machine Learning & AI

Target audience

Developers, Researchers, Analysts, Statisticians

Prerequisites

Basic knowledge of programming & mathematics

Further information

To complete this training course, we are offering a course on Deep Learning & AI with [TensorFlow](#).

JULIA Training Program Language: Data Science

PRESENTATION OF THE JULIA LANGUAGE

- History
- Language principle
- Comparison with other languages
- Basic syntax
- Alternative environments (Juno, iJulia, Sublime-iJulia)
- The Julia ecosystem
- "Hello World"

SCALAR TYPES

- Whole
- Floating-point numbers
- Complex numbers
- Rational numbers

TABLES

- Vectors
- Matrix
- Multidimensional tables
- Heterogeneous tables

OTHER FEATURES

- Tuples
- Ranges
- Dictionaries
- Symbols

DEFINE YOUR OWN CHARACTERISTICS

- Abstract Type
- Composite Type

FUNCTIONS

- Define a function
- Multiple shipment
- Parametric functions
- Functions changing inputs
- Anonymous functions
- Optional function arguments
- Required function argument

BUILDERS

- Inner
- Outer

CONTROL FLOW

- Compound expressions and scoping
- Conditional valuation
- Loops
- Exception handling
- Tasks

ORGANIZATION CODE

- Modules
- Packages

META-PROGRAMMING

- Symbols
- Expressions
- Quote
- Internal representation
- Parsing
- Evaluation
- Interpolation

READING AND WRITING DATA

- File system
- Data I/O
- Low-level data I/O
- Data frames

DISTRIBUTIONS AND STATISTICS

- Defining distributions
- Interface for distribution sampling and analysis
- Average
- Variance
- Covariance
- Hypothesis testing
- Generalized linear models

PLOTTING

- Tracing packages (Gadfly, Winston, Gaston, PyPlot, Ploty, Vega)
- Introduction to Gadfly
- Interact and Gadfly

PARALLEL COMPUTING

- Implementing Julia's message transition
- Remote call and retrieval
- Parallel board (PMAP)
- Task-based scheduling
- Tables distributed

STAND-ALONE PROGRAMS AND PACKAGE MANAGEMENT

- Create and run stand-alone programs
- Using the new V1.x package manager

MACHINE LEARNING (OPTIONAL MODULE)

- Machine Learning
- Artificial intelligence
- Julia features (MLBase.jl, Flux.jl, Knet.jl)

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.