Introduction to Julia Programming: Machine-Learning Models and AI Training

COURSE CONTENT

About Multisoft

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About Course

The Introduction to Julia Programming: Machine-Learning Models and AI course offered by Multisoft Systems is designed for programmers and data scientists eager to harness the power of Julia in developing AI and machine-learning models.

Module 1: Introduction and Overview

- ✓ What is Julia?
- ✓ LLVM
- ✓ Installing and Using Julia
- ✓ The Julia REPL
- ✓ Julia IDEs
- ✓ Installing the Julia kernel for Jupyter notebooks
- ✓ VS Code

Module 2: Fundamentals of the Julia Language

- ✓ Variables and Types in Julia
- ✓ Integers
- ✓ No overflow checking
- ✓ Floats
- ✓ Strings
- ✓ Characters versus strings
- ✓ Strings are assumed to be UTF-8
- ✓ print
- ✓ println
- ✓ formatted printing
- ✓ Dates
- ✓ Using Latex Symbols
- ✓ Best Practices for Datatypes
- ✓ Best practice to ensure the compiler can correctly deduce type
- ✓ Julia Operators and Functions
- ✓ Functions and operators
- ✓ pipe operator
- ✓ Function composition
- ✓ Tuple arguments are immutable

- ✓ Array arguments are mutable
- ✓ Variable number of arguments
- ✓ Broadcasting a function
- ✓ Anonymous functions
- ✓ Contents - Multiple Dispatch
- ✓ Multiple Dispatch
- ✓ Function Signatures

Module 3: Julia Arrays

- ✓ Arrays
- ✓ Julia matrices are in column-major order
- ✓ Linear and Cartesian indexes
- ✓ Each Index operator
- ✓ Arrays with custom indices

Module 4: Input and Output

- ✓ FileIO Package
- ✓ Standard File Types
- ✓ Implementing Loaders and Saves

Module 5: Putting machine learning theory into practice

- ✓ Statistical modeling
- ✓ Machine Learning

Module 6: Neural Networks with Julia

- ✓ Neural Network Basics in Julia
- ✓ Advanced Neural Network Libraries in Julia
- ✓ Performance Tuning for Neural Networks
- ✓ Quantization of Neural Networks

Module 7: Debugging, Profiling, and High-Performance Julia

- ✓ The Julia Debugger
- ✓ High-Performance Julia
- ✓ Principles of high-performance programming
- ✓ Profiling Julia code

Module 8: Interoperating with other Artificial Intelligence Platforms

- ✓ Julia with TensorFlow and PyTorch
- ✓ ONNX
- ✓ Creating a computer vision system
- ✓ Picking a model from the "zoo"
- ✓ ResNet