MY LEARNING JOURNEY IN COMPUTING FOR DATA SCIENCES (SEMESTER 1)

What I Learned – Computing for Data Sciences

Semester 1 | M.Sc. Big Data Analytics

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COURSE OVERVIEW

- Language Focus: Java
- Goal: Build computational and algorithmic thinking
- Application: Numerical methods, Big Data, Simulation

JAVA CONCEPTS

- OOP: Classes, Inheritance, Interface
- Exception Handling & Multithreading
- Data Structures: Array, List, Stack

ALGORITHMS

- Sorting: Bubble, Merge, Quick
- Searching: Linear, Binary
- Complexity Analysis: Big O Notation

PROJECT 1 – NEWTON-RAPHSON

📌 **Objective:**

To create a Java program that implements the **Newton-Raphson numerical method** for finding roots of a nonlinear equation.

🧠 **Concept:**

The Newton-Raphson method is an iterative technique used to approximate roots of a real-valued function. It is widely used in mathematical computing, engineering, and machine learning.

PROJECT 2 – SORTING COMPARISON

📌 **Objective:**

To build a Java program that compares the **performance of sorting algorithms** on randomly generated arrays.

🧠 **Algorithms Compared:**

- **Bubble Sort**
- **Merge Sort**
- **Quick Sort**

TOOLS USED

- Java 8, IntelliJ IDEA
- RStudio, GitHub

KEY LEARNINGS

- Programming for real-world analytics
- Numerical & statistical computing
- Improved algorithmic understanding

Thank You

- Questions?
- Let’s connect: LinkedIn | GitHub | Email