

Specialised Programme on Computer Science and New/Emerging Technologies - Equatorial Guinea (EG) – 2 Weeks

Course Contents

Big Data Technologies

Introduction to Big Data, Definitions, 5 Vs (Volume, Velocity, Variety, Veracity, Value) Traditional vs Big Data approach, Real-world applications (healthcare, finance, social media, etc.), Distributed Storage Systems Hadoop Ecosystem, HDFS (Hadoop Distributed File System)

Hive - SQL on Hadoop, Tables, HiveQL demo

Apache Spark - Why Spark over Map Reduce? Spark architecture: RDDs, DAG, Lazy Eval, Data Frames and Spark SQL

Demo: PySpark (Data Frame operations on a sample dataset), Spark Structured Streaming introduction

Fundamental of Artificial Intelligence

Why AI Now? Revolution of AI, Philosophies of CS & Real-world Implications, Revolution & Current Trends in AI, Applications in various Domains, Supervised & Unsupervised Learning, Types of Search Methodologies, Uninformed Search Algorithms

Machine Learning

What is machine learning? Key Components: Learning, Reasoning and Self-correction, Traditional vs. AI Problem-Solving, Role of Data in AI, Machine Learning Types Supervised Learning, Unsupervised Learning, Reinforcement Learning, AI Models- Deep Neural Networks (DNN) Convolutional Neural Networks (CNN), Generative AI, Model Lifecycle, Monitoring and Maintenance, Challenges & Solutions -Data Drift Issues, Ethical Considerations, Mitigation Strategies.

Cyber Security

Information Security, Data Protection and Integrity, OS vulnerability and Prevention, Internet Security, Email Security, USB Security, Desktop Security, Mobile Security, Introduction and Types of Cyber Crime, Introduction to Cryptography, Introduction to Cyber Attacks, Introduction to Threat Intelligence, Introduction to Network Security, Introduction to Cyber Forensics

Cloud Computing

Introduction to Cloud Computing, Advantages and Disadvantages of Cloud Computing, Types of Cloud, Cloud Service Model, Virtualization, Containerization, Cloud Networking, Infrastructure as Code (IaC), Public Cloud Service Provider