Applied learning curriculum for the 3MTT programme

DATA SCIENCE

Overview: Exploring the art of extracting insights from data.

Key Learning Outcomes

- Mastering data collection, cleaning, and preprocessing.
- Developing skills in predictive models using statistics and machine learning.
- Creating data visualizations for effective communication.
- Utilizing big data tools and technologies.

Training Methodology

Hands-on coding, Assignments, Projects, and real-world datasets.

Duration

12 Weeks

Applied Learning Course Content

Weekly Tasks and Individual Project
Special 3MTT Seminars/Workshops
Group Projects Options
Mode of Delivery and Program Structure

Weekly Tasks and Individual Project for Data Science

Project: Respiratory Condition Predictor with Health Recommendations

Creation of a project titled "Respiratory Condition Predictor with Health Recommendations". This project involves building a simple respiratory condition prediction model using Python and providing health recommendations based on the prediction.

Week 1-2: Introduction to Data Science, Python, and Setup

Objective: Introduce data science concepts, programming in Python, and set up the project environment.

Tasks: Watching introductory videos on data science and Python.

Installing necessary tools (e.g., Python, Jupyter Notebook).

Week 3-4: Exploratory Data Analysis (EDA)

Objective: Explore and analyze a respiratory dataset to gain insights.

Tasks: Loading the respiratory dataset using pandas.

Exploring data distribution, summary statistics, and missing values.

Visualizing relationships between variables using matplotlib/seaborn.

Week 5-6: Data Preprocessing and Programming Basics

Objective: Prepare the dataset and introduce basic programming concepts.

Tasks: Handling missing values in the dataset.

Introducing basic Python programming concepts (variables, loops, conditions).

Week 7-8: Building a Simple Respiratory Condition Prediction Model

Objective: Implement a basic machine learning model for respiratory condition prediction.

Tasks: Choosing a simple classification model (e.g., Decision Trees).

Splitting the dataset into training and testing sets.

Training the model and make predictions.

Week 9-10: Health Recommendation System

Objective: Implement a health recommendation system based on the prediction.

Tasks: Create a basic recommendation system using if-else conditions.

Provide health recommendations for users based on the predicted respiratory condition.

Week 11-12: User Interface and Application

Objective: Creating a simple user interface for the respiratory condition predictor.

Tasks: Introduce basic user interface concepts (e.g., using Python libraries like Tkinter).

Develop a simple application where users can input health indicators and receive predictions and recommendations.

Special 3MTT Seminars (Weekly)

1. Introductory Seminar
2. 3MTT Courses Fundamentals Seminar: Digital Creativity: Exploring the convergence of Coding, Data, Graphics, Gaming, Animations, and AI
3. Emotional Intelligence Seminar: Navigating Team Dynamics in Technology Projects.
4. Project management Seminar: Introduction to Agile Project Management
5. Financial Intelligence Seminar: Introduction to an Integrated Financial Growth Plan.
6. Workshop: Groupings and Group Integration of Fellows
7. Introduction to SYL Multimedia Projects (EdTech, HealthTech, GovTech, InsurTech, AgricTech)
8. Introduction to Freelance Websites (Upwork, Turing): Optimizing Online opportunities for Building Enviable Portfolios
9. Excursion to a local player in the Technology Industry (African Centre for Excellence)
10. Project Presentation Review Sessions
11. Final Projects Presentation Seminars and Awards

Group Projects Options

1. Chatbot development for managing online CRM for Government agencies and organization
2. Public Healthcare systems: AI driven Avatars on displays that can assist doctors when scarce at primary healthcare centers
3. Intelligent Tutoring Systems for Public Schools in form of AI driven Display boards
4. Smart Farming solutions (Apps, Websites) for Poultry and Livestock Management
5. Effective Document Management Systems for Government Agencies
6. Chatbot based FinTech App based on indigenous Languages
7. Gamified App for teaching English and Mathematics to Primary School Students

8. An food recipe App based on picture of served food
9. A car assistance AI Agent in form of an App for helping with car emergencies.
10. An Interactive mobile App with animated illustration of advanced technologies (AI, Blockchain, IoTs, VR) in indigenous Languages
11. An App for automating the prompt reporting of Local, state and federal roads for necessary immediate action

Mode of Delivery and Program Structure

We shall be adopting a blended learning model that combine both in-person and online components to enhance the Fellow's experience with our company. Our approach ensures flexibility, engagement, and the development of peer-to-peer communities.

Program Structure

- Introductory Classes: We begin each program with a mandatory introductory class, setting objectives, tracking progress, and establishing ground rules. These sessions are conducted through a combination of Zoom meetings for remote participants and on-site sessions for those who prefer in-person interaction. This helps to foster a sense of community from the outset.
- Online Resources: We leverage technology to facilitate learning through Computer-Based Training (CBTs), our dedicated mobile application (Schoolmate), and an online portal. These platforms provide students with on-demand access to course materials, resources, and collaboration tools.
- Project-Based Learning: To ensure students gain competence in their areas of expertise, we incorporate project-based learning into our programs. This approach encourages practical application of knowledge and problem-solving skills, fostering a deeper understanding of the subject matter.
- Live-Online Sessions: We prioritize live-online participation for software-driven hands-on sessions. This allows for real-time interaction with

instructors, fostering engagement and ensuring that students can ask questions and receive immediate feedback.

- Camp-Style Sessions: To maximize concentration and minimize distractions from daily work cycles, we employ a camp-style format for many of our training sessions. This involves immersive, intensive learning experiences that are designed to create a focused and dedicated environment conducive to deep learning.
- Peer-to-Peer Communities: We strongly believe in the value of building peer-to-peer communities within our training programs. To achieve this, we use the following strategies

    a. Group Assignments: We organize students into small groups to collaborate on various assignments and projects. This encourages peer-to-peer interactions, promotes teamwork, and allows students to learn from each other's experiences and perspectives.

    b. Real-Life Problem Solving: Many of our training programs are structured around solving real-life problems relevant to our society. By working together to address these challenges, students naturally form bonds and share experiences. These practical projects not only enhance their skills but also create a sense of community among participants.

    c. Online Forums and Discussion Boards: Our online portal includes discussion forums where students can engage in ongoing conversations, share knowledge, and seek assistance from their peers. These virtual spaces enable the building of a supportive community that extends beyond the classroom.

    d. Peer Review and Feedback: We incorporate peer review processes into assignments and projects. This not only helps students gain valuable

feedback on their work but also fosters a sense of collective responsibility for each other's success.