Excel & VBA Automation with Machine Learning

Course Description

Unlock the power of Excel and VBA automation while diving into the fundamentals of machine learning with "Excel & VBA Automation with Machine Learning Essentials." This hands-on course is designed for business professionals, data analysts, and enthusiasts looking to streamline workflows, automate tasks, and integrate predictive modeling into Excel using Python. Over three days, participants will master essential Excel functions, build dynamic dashboards, automate reporting with VBA, and explore advanced programming techniques. By the end of the course, learners will develop practical machine learning models, connect Excel with Python, and create an end-to-end data-driven solution to enhance decision-making. Whether you're new to VBA or eager to harness ML capabilities within Excel, this course offers a structured, application-focused approach to modern data automation.

Day 1: Excel & Intro to VBA (Lightweight)

- Essentials of Excel for Business Users
- Quick overview: formulas, functions, formatting
- Pivot tables and charts
- Hands-on: Create a basic business dashboard
- Introduction to Macros and VBA
- Recording a macro and accessing Developer Tab
- Basic structure of a VBA script
- Hands-on: Record and edit a macro for data formatting
- Simple VBA for Automation
- Message and Input Boxes
- Variables and control structures (If, For loops)
- Hands-on: Write a macro to clean and process data

Day 2: Advanced VBA & Introduction to ML

- Advanced VBA Programming
- Error handling and debugging
- Working with ranges, worksheets, and user forms

- Hands-on: Build a custom form to collect and store data
- Automating Reporting Tasks
- Automate Pivot Tables and emailing reports
- Hands-on: Generate and email automated Excel reports
- Introduction to Machine Learning
- ML concepts: supervised vs unsupervised, target variable
- Data preprocessing basics: handling missing values, normalization
- Hands-on: Prepare a dataset in Excel for ML modeling

Day 3: Machine Learning in Excel & Python Integration

- Predictive Modeling Techniques
- Linear regression: theory + business use cases
- Logistic regression: theory + classification examples
- Hands-on: Build and interpret a linear regression model in Excel using XLminer
- Python Integration with Excel for ML
- Introduction to using Python in Excel (Python in Excel or xlwings)
- Writing Python code to perform ML (scikit-learn basics)
- Hands-on: Predict sales using Python + Excel (via API or embedded code)
- Connecting VBA with ML Models
- Using VBA to call Python scripts or APIs
- Sending data from Excel to Python and retrieving predictions
- Hands-on: Build an end-to-end ML pipeline connected to Excel
- Wrap-up and Final Project
- Mini-project: Build a sales prediction tool using Excel + Python ML
- Presentations, feedback, and next steps