Certification Course: Practical Python Applications (for Professionals)

Summary
- ✓ Course dates: September 13, 2024 – October 05, 2024
- ✓ Course duration: 3 weeks
- ✓ Language: English
- ✓ Location: Online
- ✓ Certificate: TU Berlin Certificate of Professional Education
- ✓ Format: Online
- ✓ Lecturer: Dongrui Jiang
- ✓ Price: 3898,50 €

Course overview

This comprehensive program is tailored for working professionals want to take Python to support practical applications in their specific fields. The course covers a spectrum of advanced Python topics, from data manipulation and visualization to web scraping, automation, and database integration. Participants will also delve into some simple machine learning fundamentals and the creation of interactive dashboards, culminating in a final project where they apply their acquired skills to real-world challenges within their professional domains.

Course content

1. Python Programming Review

- ✓ Quick Refresh: Rapid review of fundamental Python concepts to provide a swift start.
- ✓ Advanced Data Types Exploration: Delve deeper into sets, tuples, and dictionaries, with a focus on advanced topics such as JSON and database integration.
- ✓ Practical Exercises: Hands-on exercises emphasizing comprehensive practice in basic Python, incorporating advanced data types for real-world data processing scenarios.

2. Data Processing and Analysis (kernel part)

- ✓ Real-world Data Scenarios: Dive into practical applications of Pandas for data manipulation
  - Time Series Data Handling: Understand and apply Pandas functionalities tailored for time-dependent datasets.
  - Geo-reference Data Processing: Learn techniques to manipulate and analyze location-based data effectively.
  - Practical examples
- ✓ Advanced Topic: Pandas vs. Excel Comparison: Explore a comparative analysis of Pandas and Excel, demonstrating how to seamlessly integrate both for enhanced practical applications.

✓ Creating Impactful Visualizations: Explore the capabilities of Matplotlib for crafting compelling visualizations to support data-driven decision-making.
✓ Advanced Data Visualization Tools: Introduce additional tools for more sophisticated and interactive visualizations.

3. Web Scraping (crawling) and Automation

✓ Web Scraping for Targeted Data Extraction: Gain hands-on experience in extracting relevant data from websites, focusing on specific targets aligned with professional needs.
✓ Data Storage and Processing: Learn best practices for storing and processing scraped data efficiently.
✓ Identifying Repetitive Tasks: Explore strategies to identify and assess tasks suitable for automation within a professional setting.
✓ Scripting Automation Solutions: Develop Python scripts to automate repetitive tasks, improving efficiency and productivity in the workplace.

4. Building Interactive Dashboards

✓ Introduction to Dashboards: Explore the fundamentals of creating interactive dashboards for data exploration and presentation.
✓ Docker Integration: Learn how to use Docker to streamline the deployment and scalability of dashboard applications.
✓ Example case of dashboard and docker.

5. Database Integration

✓ Foundations of Databases: Gain a basic understanding of databases, including their types, structures, and role in business applications.
✓ Python Database Utilizing SQL: Explore advanced techniques for interacting with relational databases using SQL, focusing on efficient data retrieval and manipulation.
✓ Python Database Utilizing NoSQL: Introduce the principles of working with NoSQL databases, providing flexibility in handling unstructured data.
✓ Best Database Practices: Learn industry best practices for database management, including optimization, indexing, and data security considerations.

6. Introduction to Machine Learning with Python

✓ Getting started with Machine Learning: Begin your journey into machine learning by understanding the basic concepts and applications.
✓ Scikit-Learn Basics: Explore simple and practical implementations of machine learning using Scikit-Learn, a user-friendly library for beginners.
✓ Real-world Applications: Discover how machine learning can be applied to solve everyday problems in various professional fields.

7. Final Project - Business Solution

   Embark on a hands-on journey to apply all acquired skills in Python for designing innovative solutions to real-world challenges within your professional domain.

Dates

Virtual classroom sessions:

- ✓ September 13, 2024 (Friday), 15:00 - 21:00 (CET)
- ✓ September 20, 2024 (Saturday), 09:00 - 17:00 (CET)
- ✓ October 05, 2024 (Saturday), 09:00 - 17:00 (CET)

Following the conclusion of the first two virtual classroom sessions, participants will undertake a period of a self-study (of 20-30 hours). This independent study phase will be accompanied by the lecturer, up to the date of the final on-site session. The lecturer will support participants for approx. 8 hours online, in the form of an open consultation, a small group workshop (or similar), by arrangement.

Booking and contact

Register here: https://www.academy-tu.berlin/en/courses/short-courses

Should you have any questions, please contact the TU Berlin Academy Team at: +49 30 4472 0232 or via email: info@academy-tu.berlin. We hope to see you in Berlin - or online - very soon!