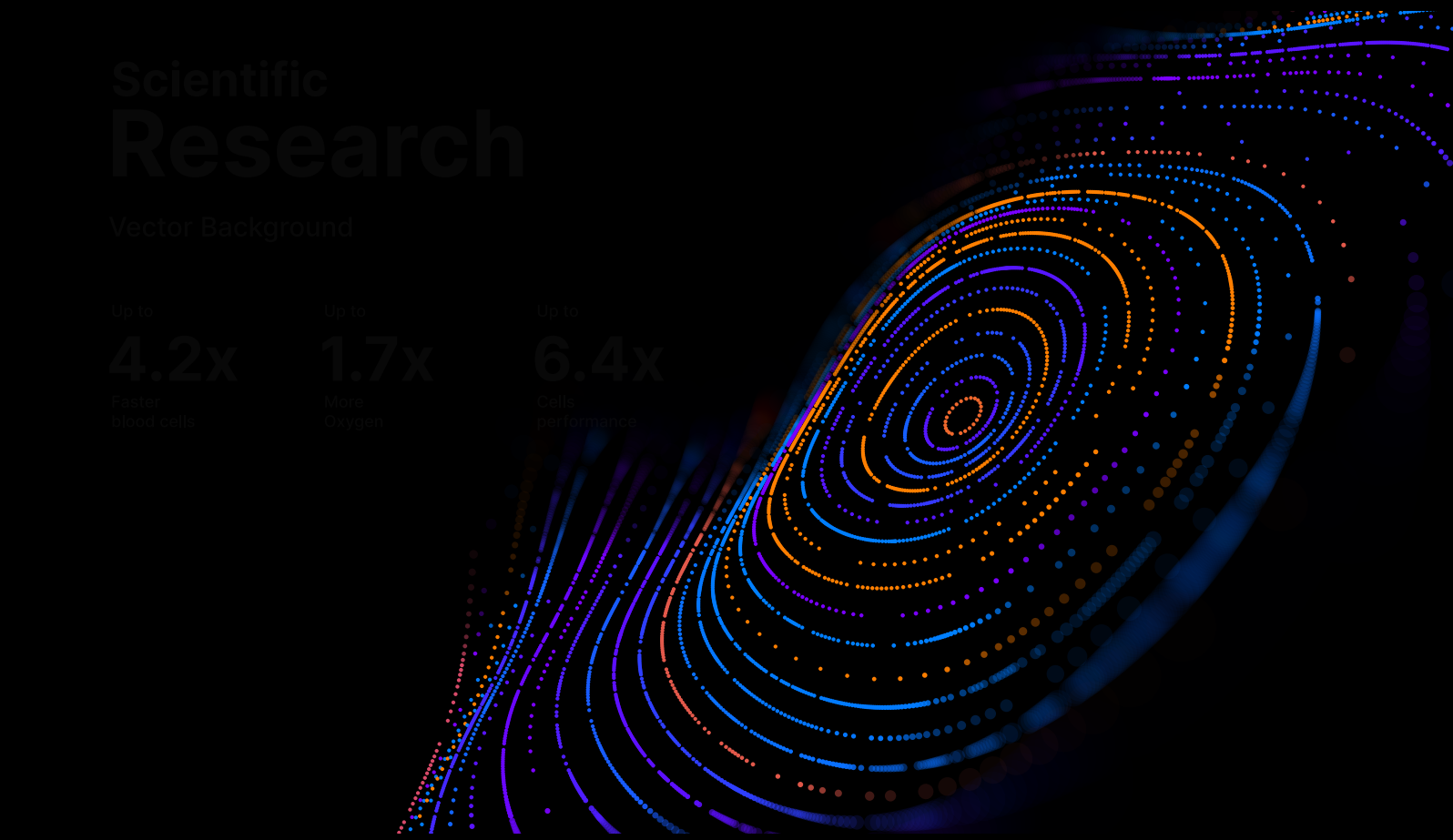
Microsoft 365 Copilot

powered by upGrad

# CopilotXcelerate: AI-Powered Python for Data Science

Master the Future of Data with Microsoft 365 Copilot



# Unlock the power of AI for Data Science Potential

A Comprehensive Program Designed to Transform Your Data Science Journey

## Programme Description

- This program is designed for aspiring data scientists looking to enhance their Python programming skills and data analysis capabilities using ethical AI tools like Microsoft Copilot while maintaining academic integrity and leveraging advanced AI-driven techniques.

- Here are some ways AI and Microsoft 365 Copilot can boost your Data Science Journey

**Learn Python 2x Faster**
Master Python with AI-generated code and debugging.

**Master In-Demand Skills with AI**
Write real-world code, analyse data, and visualise results.

**Ace Interviews with AI Prep**
Practice coding questions and create tailored resumes with Copilot.

**Master Microsoft 365 Copilot**
Leverage Word, Excel, PowerPoint, OneDrive, and Outlook.

**Boost Productivity**
Streamline workflow and achieve more with Copilot automation.

# Master the Microsoft 365 Tool Suite

Hands-On Experience with Leading AI and Productivity Apps

01

## Word

Advanced writing, summarising, and formatting with Copilot

02

## Excel

Data cleaning, analysis, and visualisations

03

## PowerPoint

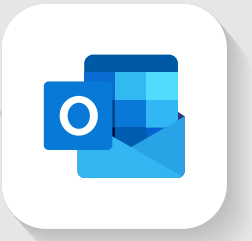
Creating engaging, AI-supported presentations

04

## OneDrive

Seamless file organisation and collaboration

05



## Outlook

Time management, email drafting, and scheduling

# Program Curriculum:
# A Deep Dive into AI-Powered Python for Data Science

5 Live Sessions to Master Every Stage of Your Data Science Journey

Session 1

## Session 1:
## Copilot Launchpad - Python Fundamentals and Control Flow

Learning Objective: You will set up Copilot Pro and use it to practice fundamental Python syntax, data types, and control flow structures.

- **Welcome, and Introduction to Copilot for Data Science:**
  - Program overview and session goals.
  - Discover the power of AI in accelerating your Python learning.
  - Get started with Copilot Chat for assistance and learning.

- **Copilot Pro Setup and Configuration:**
  - Follow a step-by-step guide to activate and configure Copilot Pro.
  - Integrate Copilot with your IDE (VS Code recommended).Customise Copilot settings for optimal Python development.
  - Learn how to use Copilot for version control in your Python projects.

- **Python Fundamentals Practice with Copilot:**
  - **Basics:** Use Copilot Chat to generate examples, explain the syntax, and explore alternative coding approaches for variables, operators, data types (int, str, bool, None), and I/O operations.
  - **Leveraging Copilot Chat for Reinforcement:** Use Copilot Chat to ask questions about concepts, generate practice problems with solutions, and clarify doubts.
  - **Copilot in Action:** Use Copilot to generate code snippets, explain code examples, and suggest alternative solutions.

- **Control Flow Practice with Copilot:**
  - **Conditionals:** Use Copilot to create practice problems, debug code, and suggest optimisations for if, Elif, and else statements.
  - **Loops:** Use Copilot to understand loop structures, generate examples, and practice for and while loop control.
  - **Copilot Chat for Debugging:** Use Copilot Chat to identify and fix errors in your control flow statements.

- **Session Wrap-Up:** Recap of using Copilot to practise Python fundamentals and control flow.

Session 2

## Session 2:
## Python Data Structures, Functions, and Modules

Learning Objective: You will use Copilot to practice working with Python data structures (lists, tuples, sets, dictionaries), functions, and modules, including managing and documenting your modules.

- **Mastering Python Data Structures with Copilot:**
  - Sequential Types: Use Copilot to generate code examples and explain operations and practice:
    - Strings: formatting, slicing.
    - Lists: comprehensions, methods.
    - Tuples: unpacking, immutability.

  - **Unordered Types:** Use Copilot to explore use cases, generate code, and practice:
    - Sets: mathematical operations, uniqueness.
    - Dictionaries: comprehensions, key-value pairs.

  - **Copilot in Action:** Use Copilot to generate code for data structure manipulations, explain the efficiency of different operations, create practice problems and solutions, and debug errors.

- **Functions Practice with Copilot:**
  - Defining and Calling Functions: Use Copilot to practice function definition, parameter passing, and return values.
  - Scope and Lifetime: Use Copilot to understand variable scope and lifetime within functions.
  - Recursion: Explore recursion with Copilot's help.

  - Copilot Chat for Function Concepts: Use Copilot Chat to get explanations of function-related concepts, generate examples, and discover best practices.

- **Modules and Packages:**
  - Importing Modules: Use Copilot to understand and practice importing standard library modules (e.g., math, random, datetime).
  - Creating, Using, Managing, and Documenting Custom Modules: Learn how to use Copilot to make, use, manage, and document your Python modules, enhancing code organisation and reusability.

- **Session Wrap-up:** Recap using Copilot to practise with data structures, functions, and modules.

Session 3

## Session 3:
## NumPy, Pandas, and Data Visualization with Python

Learning Objective: You will utilise Copilot to practice numerical computation with NumPy, data analysis with Pandas, and create data visualisations with Matplotlib and Seaborn.

- **NumPy Practice with Copilot:**
  - **Arrays:** Use Copilot to practice array creation, indexing, slicing, reshaping, and broadcasting.
  - **Mathematical Operations:** Use Copilot to perform mathematical operations on arrays and understand vectorised computation.
  - **Copilot in Action:** Use Copilot to generate NumPy code snippets, explain array operations, and see the power of NumPy for numerical tasks.

- **Data Analysis with Pandas and Copilot:**
  - **Series and DataFrames:** Use Copilot to practice creating, manipulating, and querying Series and DataFrames.
  - **Data Cleaning and Transformation:** Use Copilot to handle missing data, perform data type conversions, and apply various data wrangling techniques.
  - **Data Aggregation and Grouping:** Use Copilot to perform aggregations, grouping operations, and generate summary statistics.
  - **Copilot Chat for Pandas Assistance:** Use Copilot Chat to explain Pandas functions, discover data analysis approaches, and get help with debugging.

- **Data Visualization with Matplotlib, Seaborn, and Copilot:**
  - **Plotting Basics:** Use Copilot to generate code for various plot types (scatter, line, bar, histogram, box plots, etc.).
  - **Customisation and Styling:** Use Copilot to customise plot appearance and add labels, titles, legends, and annotations.
  - **Interpreting Visualizations:** Use Copilot to understand and explain the insights revealed by plots.
  - **Copilot in Action:** Use Copilot to generate complete visualisation code from descriptions, suggest appropriate plot types, and help with styling.
  - **Automating Repetitive Tasks:** Learn how to use Copilot to automate repetitive data analysis and visualisation tasks, enhancing productivity.

- **Session Wrap-up:** Recap of using Copilot to practise with NumPy, Pandas, and data visualisation libraries.

Session 4

## Session 4:
## Advanced Python for Data Science and Copilot Workflow Enhancement

Learning Objective: You will use Copilot to master advanced Python concepts like object-oriented programming (OOP), explore techniques for efficient data processing and analysis, and enhance your data science workflow with Copilot in Word, Excel, and PowerPoint.

- **Advanced Python - Object-Oriented Programming (OOP) with Copilot:**
  - **Classes and Objects:** Use Copilot to understand and practice defining classes, creating objects, and working with attributes and methods.
  - **Inheritance and Polymorphism:** Explore how Copilot can help you implement inheritance and polymorphism in your code.
  - **Copilot in Action:** Use Copilot to generate code for OOP concepts, explain class structures, and demonstrate the benefits of OOP for organising and reusing code.

- **Techniques for Efficient Data Processing and Analysis:**
  - **List Comprehensions and Generators:** Use Copilot to write more concise and efficient code with list comprehensions and generators.
  - **Lambda Functions:** Use Copilot to create and use anonymous functions for simple operations.
  - **Working with Large Datasets:** Use Copilot to explore techniques like chunking and iterators for processing large datasets that don't fit in memory.
  - **Copilot Chat for Optimization:** Ask Copilot Chat to suggest ways to optimise your code for performance and memory usage.

- **Copilot for Data Science Workflow Enhancement:**
  - **Using Copilot in Word:** Generate report outlines, draft data analysis reports, and incorporate Python code snippets and visualisations.
  - **Using Copilot in PowerPoint:** Create data-driven presentations, generate slide content from data analysis results, and discover effective layouts.
  - **Using Copilot in Excel:** Automate data cleaning and transformation tasks, generate formulas for data analysis and get a brief overview of creating interactive dashboards.

- **Session Wrap-Up:** Recap of using Copilot for advanced Python concepts and workflow enhancements.

Session 5

## Session 5:
## Copilot for Career Success in Data Science

Learning Objective: You will leverage Copilot to prepare for a data science career, build a strong portfolio, and practice interview skills.

- **Copilot for Career Planning and Job Search:**
  - **Market Research with Copilot Chat:** Use Copilot Chat to research data science roles, required skills, salary ranges, industry trends, and potential employers.
  - **Resume/CV and Cover Letter Crafting:** Use Copilot in Word to generate tailored resumes and cover letters and get feedback on their content and structure. Learn how to create a strong online presence that showcases your skills.
  - **Interview Preparation:** Use Copilot Chat to practice data science interview questions (technical and behavioural and get feedback on your answers. Learn strategies for effectively communicating your skills and experience during interviews.

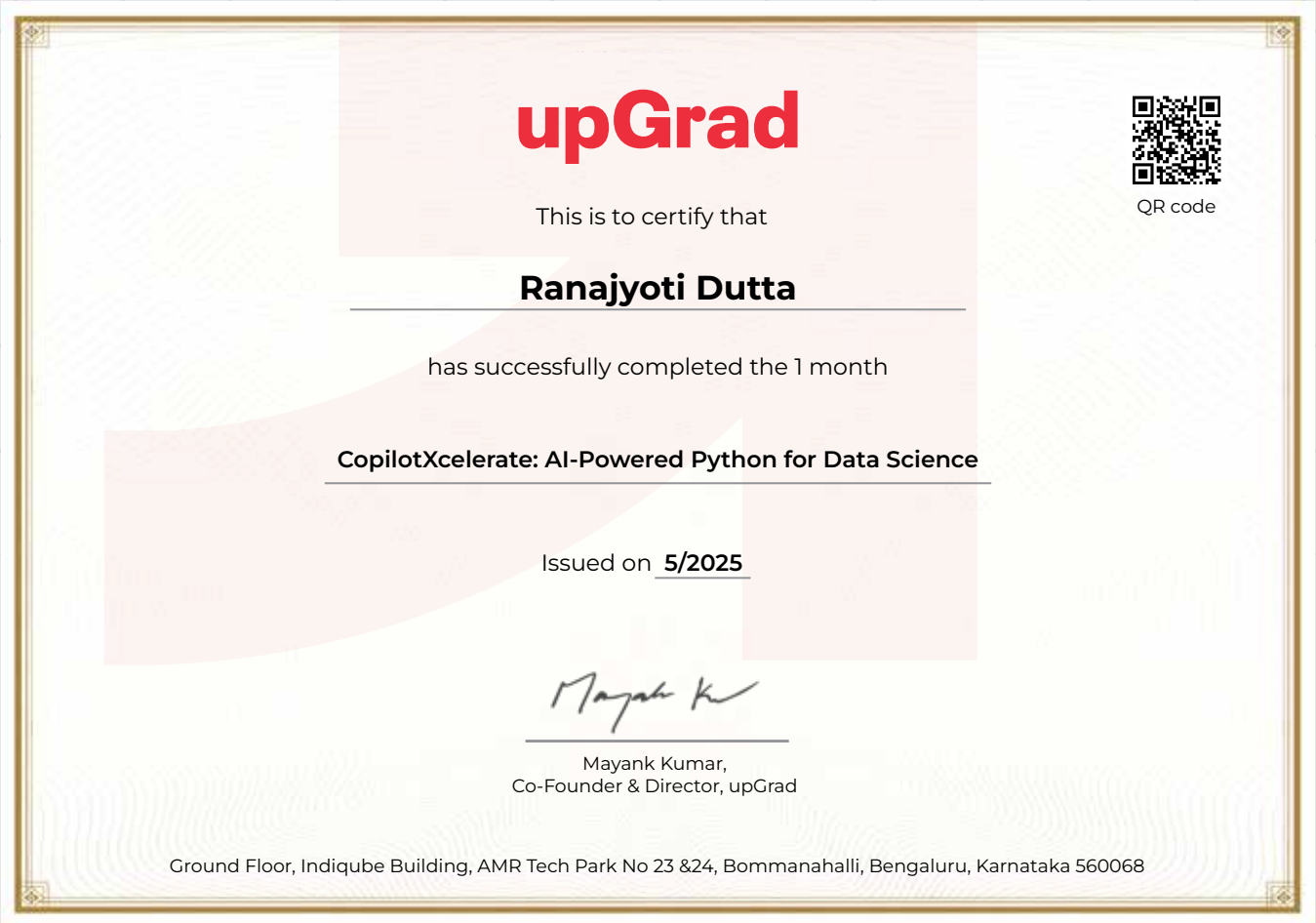
- **Building a Data Science Portfolio with Copilot:**
  - **Project Idea Generation:** Use Copilot to brainstorm project ideas that align with your interests and career goals.
  - **Project Planning and Outlining:** Use Copilot to outline the steps involved in a data science project, including data collection, cleaning, analysis, visualisation, and modeling.
  - **Project Documentation:** Use Copilot to write clear project descriptions, explain your methodology, and document your code effectively.
  - **Showcasing Your Portfolio:** Get guidance on platforms for showcasing your projects e.g., GitHub, personal website) and how to present your work effectively to potential employers.

- **Practice and Feedback:**
  - Mock Interview Session: Participate in a mock interview using Copilot Chat,
  - focusing on technical skills and behavioural questions.
    Portfolio Review: Get feedback on your portfolio projects from peers and the instructor, using Copilot to suggest improvements.

- **Session Wrap-Up:** Recap of using Copilot for career planning, portfolio building, and interview preparation. Discuss the next steps for continued learning and professional development in data science.

# Earn an upGrad Certificate of Completion

Demonstrate Your Expertise in AI-Assisted Data Science



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QR code

This is to certify that

**Ranajyoti Dutta**

has successfully completed the 1 month

**CopilotXcelerate: AI-Powered Python for Data Science**

Issued on **5/2025**

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