PYTHON CHARMERS

PYTHON FOR NETWORK & SYSTEMS ENGINEERS

Python for Network & System Engineers
A specialist course

Audience: This is a course for network engineers and systems engineers, devops staff, hardware engineers, and back-end developers.

Overview: By the end of the course, you will have all the knowledge you need to write and interact with Python code for a variety of purposes, with a particular focus on controlling machines, automating system processes, and interacting with APIs.

Skills: You will understand the elegance and power of Python and have had experience using several important standard and third-party libraries, including for parsing text and log files, matching strings with regular expressions, and scripting tasks via SSH connections.

You will also have learned about consuming and creating web APIs and some best practices in Python for writing maintainable code.

Format: Each topic is a mixture of expert instruction, worked examples, and hands-on exercises.

Expert instructors: See bios below.

Venues: modern computer-based training facilities (CBD locations).

Dates and locations, September 2019 - January 2020:
Sydney: 23-26 September 2019
Singapore: 21-24 October 2019; 13-16 January 2020

Duration: 4 days

Price: $3,200 (excl GST)

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Topic outline

Day 1: Python basics

Day 1 covers how to use Python for basic scripting and automation tasks, including tips and tricks for making this easy:

- Why Python? What's possible?

- The *Jupyter* notebook for rapid prototyping

- Modules and packages

- Python concepts: an introduction through examples

- Essential data types: strings, tuples, lists, dicts

- Worked example: fetching and ranking real-time data from a web API

- Raising and handling exceptions

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Topic outline

Day 2: Handling, analyzing, and presenting data in Python

Python offers amazingly productive tools like Pandas for working with different kinds of data. Day 2 gives a thorough introduction to analyzing and visualizing data easily:

- Reading and writing essential data formats:
    CSV, Excel, SQL databases, JSON

- Indexing and filtering data in Pandas

- Data fusion: joining & merging datasets

- Summarization with "group by" operations; pivot tables

- Interactive visualization and statistical graphics with *Altair*

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Topic outline
Day 3: Network and system automation

Day 3 gives you a tour of the amazing standard library and important 3rd-party tools for automating various systems-level tasks with Python:

- Network automation via SSH with *Fabric*

- Parsing log files with regular expressions

- Handling files & paths; dates, times, and IP addresses

- Cryptographic hashing of file contents (SHA256, MD5 etc.)

- Worked example: finding duplicate files (by contents)

- Compressing and uncompressing data (zip, tar, bzip2 etc.)

- Running external commands as subprocesses

- Process and system monitoring with *psutil*

- Worked example: automatically sending emails

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Topic outline

Day 4: Web APIs and best practices

Day 4 shows you how to automate a variety of further tasks, such as consuming and creating web APIs. It also teaches you about some "best practices" of development using Python:

Morning: REST APIs

- Accessing REST web APIs in more depth (sessions, OAuth)

- Creating REST web APIs with Flask

- Templating with Jinja2; automatically creating config files (e.g. YAML)

Afternoon: best practices

- Python developer tools and debugging tools

- Best practices for maintainability; tips and tricks

- Creating reusable scripts, modules and packages

- Logging and unit testing

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Supplemental materials

We will provide you with printed course notes, cheat sheets, and a USB stick containing kitchen-sink Python installers for multiple platforms, solutions to the programming exercises, several written tutorials, and reference documentation on Python and the third-party packages covered in the course.
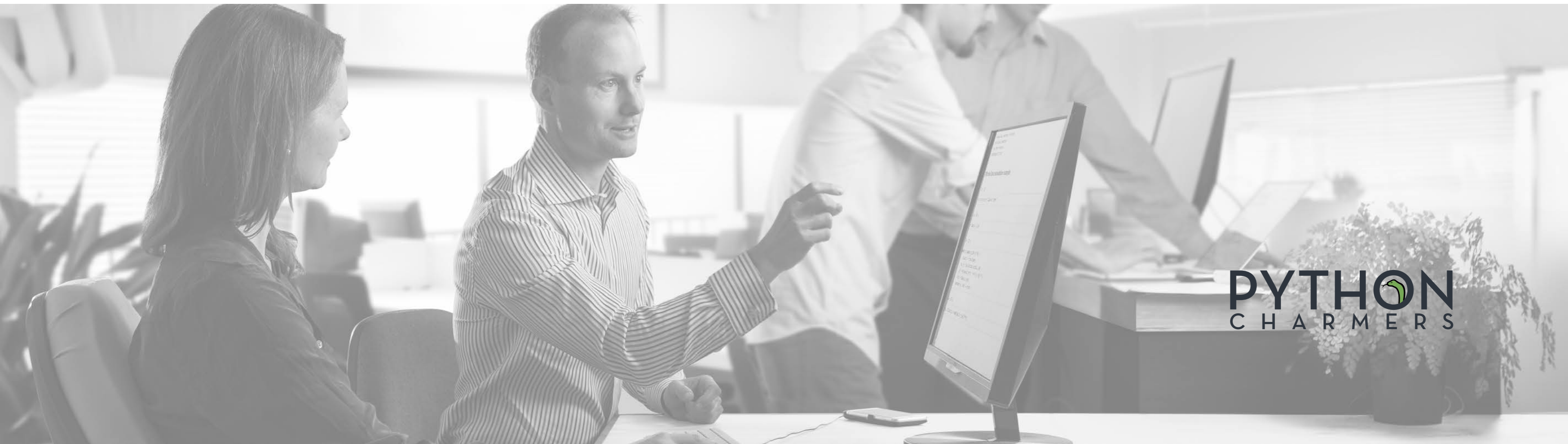
Instructor bio

Dr Edward Schofield

Ed has consulted to or trained over 2000 people from dozens of organisations in data analytics using Python, including A*STAR, Atlassian, Barclays, Cisco, CSIRO, Dolby, Harvard University, IMC, Singtel Optus, Oracle, Shell, Telstra, Toyota, Verizon, and Westpac. He is well-known in the Python community as a former release manager of *SciPy* and the author of the widely used *future* package. He regularly presents at conferences in data science and Python in Australia and internationally.

Ed holds a PhD in machine learning from Imperial College London. He also holds BA and MA (Hons) degrees in mathematics and computer science from Trinity College, University of Cambridge. He has 20+ years of experience in programming, teaching, and public speaking.

Instructor bio

Janis Lesinskis

Janis is a software developer who has been using Python since 2005. He has worked on several high-end Python projects across a variety of software industry sub-sectors, including: mathematical optimization engines for logistics, a game theory solver, a variety of backend web apps with *Django* and *Flask*, and as a scalability consultant improving Python performance.

Janis loves open source and is the author of several open source Python projects on GitHub. He is involved in education in several ways: in an in-house capacity as a Python consultant, as a regular blogger, as a volunteer for events like Django Girls and Python community workshops, and as a frequent presenter about Python at local meetup events. As well as dozens of corporate training courses in Australia, He has run an intermediate bootcamp in web development for Python Charmers and Girls in Tech in San Francisco.

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Instructor bio

Henry Walshaw

Henry has almost 15 years of experience in Python application development and has trained hundreds of people in how to use Python from organizations including AGL, the Australian Bureau of Meteorology, ESRI, the NSW Department of Finance, National Australia Bank, and Telstra.

Henry's core technical expertise relates to the development and analysis of large scale spatial datasets (primarily using Python), and communicating this understanding to both subject matter experts and the general public.

Before joining Python Charmers, Henry worked in both government and industry — at Geoscience Australia, the Victorian Department of Sustainability and Environment, and the Environmental Protection Agency (EPA); as a consultant with Sinclair Knight Merz (SKM), a manager at we-do-IT, and as CTO of a startup. He holds a Bachelors in Computational Science.

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Instructor bio

Dr Robert Layton

Robert is the author of the book "Data Mining in Python", published by O'Reilly. He provides analysis, consultancy, research and development work to businesses, primarily using Python. Robert has worked with government, financial and security sectors, in both a consultancy and academic role. He is also a Research Fellow at the Internet Commerce Security Laboratory, investigating cybercrime analytics and data-mining algorithms for attribution and profiling.

Robert is a contributor to the Python-based *scikit-learn* open source project for machine learning and writes regularly on data mining for a number of outlets. He is also the author of the website "LearningTensorflow.com". He has presented regularly at a number of international conferences in Python, data analysis, and its applications.

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Instructor bio

Dr Juan Nunez-Iglesias

Juan Nunez-Iglesias is co-author of the book *Elegant SciPy*, published by O'Reilly Media. Juan is a core developer of the *scikit-image* Python library, and has contributed to many others in the scientific Python ecosystem, including *SciPy*, *NetworkX*, and *Matplotlib*. He has taught and presented at the SciPy conference in Austin, EuroSciPy, PyCon Australia, the Advanced Scientific Programming in Python summer school, and Software Carpentry workshops.

Juan is a research fellow at Monash University, with interests in neuroscience and biological image analysis. He also has a particular interest in renewable energy and the environment.

Juan has Bachelor's degree in Biomedical Science from the University of Melbourne and both an MSc in Statistics and PhD in Computational Biology and Bioinformatics from the University of Southern California.

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Other information

Computer: An computer and internet connection will be provided for you during the course.

Exercises: There will be practical programming exercises throughout the course. These will be challenging and fun, and the solutions will be discussed after each exercise and provided as source code. During the exercises, the trainer(s) will offer individual help and suggestions.

Timing: The course will run from 9:00 to roughly 17:00 each day, with breaks of 50 minutes for lunch and 20 minutes each for morning and afternoon tea.

Personal help: Your trainer(s) will be available after each day for you to ask any one-on-one questions you like — whether about the course content and exercises or about specific problems you face in your work and how to use Python to solve them. We encourage you to have your own data sets ready to discuss if you wish.

About Python Charmers

Python Charmers is the leading provider of Python training in the Asia-Pacific region, based in Australia and Singapore. Since 2010, Python Charmers has given over 330 training courses and bootcamps to over 3000 delighted people from organizations such as AGL, Atlassian, Barclays, CSIRO, Cisco, Deloitte, Dolby, IMC, pwc, Singtel Optus, Shell, Sportsbet, Telstra, Toyota, Verizon, Westpac, and Woolworths. Python Charmers specializes in teaching programming and data science to scientists, engineers, data analysts, quants, and computer scientists in the Python language.

Python Charmers' trainers boast years of Python experience and deep roots in the open source community, as both speakers at events and contributors to well-known open source projects, including *NumPy*, *SciPy*, *Scikit-Learn*, *Pandas*, and *Python-Future*.

Testimonials: Testimonials from past participants of similar bootcamps and training courses are available at

https://pythoncharmers.com/testimonials/

Questions: We are happy to customise this program further on request. Please let us know if you would like to discuss this or have any other questions.

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