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3RD WEEK INTERNSHIP REPORT

PYTHON INTERNSHIP

"Python for SEO and Data Science"

(INDUSTRIAL REPORT-WEEK 3)

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Executive Summary
This report provides details of the Industrial Internship provided by Upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT). This internship is focused on a project/problem statement provided by UCT. We had to finish the project including the report in 6 weeks' time. This weekly report explains the use and applications of Python in SEO and Data science. -E-Book learning Python for everyone.

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1 Preface

Summary of the 3rd week's work.

I undertook this internship project and completed the 3rd-week internship report under the guidance of this associated company. I am grateful to all for their patience and assistance during my online training at their Virtual site named" Upskill Campus". It was a good learning experience for me to work on their weekly project, as the project involved many innovative practices.

1.1.1 Information about the internship position

I joined Upskill campus for an internship program in the position of a **Python Intern**. While the central focus was on focusing in this program wisely and learn effectively, I also handled various other tasks as they occurred.

I want to thank my advisers and everyone at the company for their patience and assistance during my on-site training. Thanks to their guidance, I was able to develop [**PYTHON SKILLS**] and learn about [**PYTHON**]. These skills would help me to expand my resume and advance my career.

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2 Introduction:Python

<u>Basic concepts:</u>

Python is a widely used general-purpose, high level programming language. It was created by Guido van Rossum in 1991 and further developed by the Python Software Foundation. It was designed with an emphasis on code readability, and its syntax allows programmers to express their concepts in fewer lines of code.

Python is a programming language that lets you work quickly and integrate systems more efficiently.

There are two major Python versions: Python 2 and Python 3. Both are quite different.

3.How Can Python Help In Seo?

3.# Introduction

Python scripts are usually used for analyzing SEO. It automates repetitive tasks and saves time. It eases Search Engine Optimization efforts. Some SEO experts use Python for quick problem-solving. For instance, Data extraction Preparation, Analysis & visualization of Machine learning and Deep learning. There is a wide scope to explore the use of Python for SEO. It allows the users to improve marketing results. Also, it enhances the strategy of targeting and converting customers.

Read on to understand the role of Python in SEO.

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- ## Why Python For SEO?

Python is a widely used programming language popular in the technology industry. SEO experts also rely on it. They are now accepting Python to automate their work. You don't have to be a data scientist or any tech expert to understand Python. It has a simple syntax and a large library making it the preferred language to learn. You can easily apply it to your day-to-day technical SEO.

Python scripts are useful, with a lot of uses for Python in the world of SEO. You can create scripts to make the SEO more efficient. With plenty of Python scripts, you can make your life easier. You can easily find a script for checking your hreflang tags, robots.txt, and more.

Here is how Python can boost your SEO experience:

- ## 1. Python SEO Analyzer

It is a useful script to analyse the website. It is a multi-purpose website crawler. Python SEO analyzer can help in the following ways:

- A quick analysis of basic SEO problems.
- Many important ranking factors like page titles, meta descriptions, and on-page keywords can take advantage of an analyzer.
- It is perfect for gaining a clear picture of any problems.
- This analyzer can help with Word count, Page Title, Meta Description, Keywords on-page, Warnings, Missing title, Missing description, and Missing image alt-text.

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- ## 2. Link Status Analyzer

The next way **Python** is applicable for Search Engine Optimization is by using a script. This script will crawl the website and analyze the URL status codes. It is called Pylinkvalidator.

For speeding up the crawling, you might need to install the libraries like XML. It Speeds up the crawling of HTML pages. You may also need an event to enable a pylinkvalidator for using green threads. Another is charged for speeding up document encoding detection.

They are very useful for crawling larger websites. Also, they enhance the link status analyzer.
The script crawls the entire URL structure of a website. It is useful in analyzing the status codes of every URL. It can be a very long process for bigger websites. Therefore, it is recommended to use the optional libraries to speed this up.

With the help of the link status analyzer 'Pylinkvalidator,' you can
Show Progress, and crawl the website and pages belonging to another host. You can also only crawl a single page and the pages it links to. It also allows crawling a website with more threads or processes than the default. With its help, one can change user agents, crawl multiple websites, check robots.txt, crawl body tags, and paragraph tags

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- ## 3. Keyword Ranking Computation

With the help of libraries like PyTrends and MatPlotLib, you can automate the keyword ranking positioning. Because of its effective results, Google Trends also use these libraries. They help to find the audience's interest in particular search terms with time.

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- ## 4. Website Speed Optimization

For a large number of web pages on a domain, it is hard to test each one of them. Also, it is a very time-consuming process. The good news is that it can be automated by Python libraries. For instance Selenium, Pandas, and BeautifulSoup.

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- ## 5. Using Analytics

Every **SEO Expert** uses one or the other analytics tool to track audience behavior and engagement. Here also, the role of Python cannot be denied. For example Google webmaster tool. It uses Python scripts to track and extract the data into many formats. These open-source libraries are useful in transferring data into document files.

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- ## 6. Meta Tag Optimization

XPATHs are useful in extracting the meta tags from the customer's website. It helps in easy optimization. With the help of Python APIs, you can extract, title, description, alt, canonical, H1, and robot tags easily.

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- ## 7. Quick Competitive Analyses

It is very important but difficult to keep an eye on competitors all the time. You need to check for their updates and launches. Python makes such repetitive tasks automated. For example,e fetching the details of competitor's services.

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- # Advantages Of Automating With Python

Although Python cannot imitate humans, its scripts can automate a large number of time-taking tasks.

These are the tasks you can automate with Python:

- It helps in identifying user intent.
- You can Map URLs before the migration.
- Eases internal link analysis.
- Perform relevant keyword research.
- Optimization of images.

Below are the examples of machine learning models useful in SEO:

- Evaluation of Content quality

- Identification of keyword gaps
- Gaining useful insights into user engagement.
- Transcribing audio
- Optimization of title tags.
- Automation of meta description creation.

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- ## Conclusion

Python enables any SEO expert to spend more time finding useful solutions. They won't just be stuck with identifying SEO-related problems. Python handles that part and saves time. Many big organizations are working on using the tools for SEO using Python. The Python language community is rising at a great pace.

4. 10 Must-Know Python for Data Science Topics:

• Introduction

Python is a buzzword in the data science world, and you've probably heard of it. This well-known programming language is employed in data science for smooth performance. Python is a versatile programming language. This demonstrates that it is not confined to data science. Together with other things, you may use it to create applications for the web and mobile devices. So, one of the most frequent errors beginners make while learning Python for data science is studying it in the wrong way. That is, not learning Python in terms of a career in Data Science. There may be extra time and effort as a result of this. We will talk about the top 10 Python topics for data scientists.

• The Top 10 Python Topics for Data Scientists That You Must Master

Python is a robust and adaptable programming language useful for the **data science** industry. It offers a wide range of tools and software for data editing, analysis, and visualisation. Data scientists can analyse and interpret data after studying these topics. It will establish the foundation for understanding and working with data in Python.

1. Apply: The panda library, a potent tool for data manipulation and analysis, works with the application of the () method in Python. Data scientists may conduct sophisticated operations on huge datasets using the apply () method. They can do it without having to create explicit loops, which is helpful for them.

2. Map: The apply the () method in pandas is comparable to Python's built-in map () function. But the map has a design suitable for use with simple iterables rather than DataFrames or Series. The map () function is helpful for data scientists to do a quick operation on each dataset member.

3. Functions: Data scientists use functions, a key Python concept. They make code more effective, legible, and maintainable by allowing you to organise and reuse it. In Python, functions are created by using the def keyword, the function name. It uses a set of brackets that may or may not contain parameters.

4. Lambda functions: also referred to as anonymous functions, are a technique for Python programmers to build quick, single-use functions. The word "lambda" is useful to define them, then one or more arguments, a colon, and a single expression are added. Because they allow for the development of straightforward functions without the need for identifying them. There is no need to include a comprehensive function definition. Lambda functions are useful for data scientists in many ways.

5. Dictionaries: Data scientists use dictionaries, a core Python data structure, to store and retrieve data. Because they enable you to keep data in a clear and accessible way, dictionaries are helpful to data scientists.

6. Sets: Data scientists also use sets, another basic data structure in Python. Data scientists find sets handy because they can drop duplicates from a dataset and carry out standard set operations like union, intersection, and difference.

7. Panda Dataframe: Pandas is a robust and adaptable Python data manipulation package. DataFrames are useful for a data scientist to handle missing information, and perform data cleaning operations. They also assist in performing other data manipulation jobs. These jobs include filtering, aggregating, and group-by operations.

8. Panda Series: You can use it to handle missing values and change data types, which allows data scientists to clean and pre-process data in a variety of ways. By creating summary statistics and infographics, data scientists can also look at the distribution of data.

9. Lists: Every data scientist will use lists, which are fundamental data structures. The list data type is a flexible and strong tool for storing and manipulating data in

Python. The ability to store several items of various sorts makes lists perfect for storing and processing data with a variety of attributes.

10. Numpy Array: A strong Python package for numerical computing is known as Numpy Array. You can execute mathematical operations on complete arrays rather than looping through the array. You can do so for each element, hence, Numpy arrays are particularly helpful for data scientists.

• Python Data Analysis Packages

Python is a versatile language that you can employ for purposes other than data science and analysis. Yet it is the libraries that provide users with the essential features that make Python so effective for working with data. Look for the main Python libraries for working with data. Spend some time getting acquainted with the fundamental goals of these products.

- Fundamental scientific computing tools include Numpy and Scipy.
- Data analysis and manipulation with Pandas.
- Plotting and visualization with matplotlib.
- Data mining and machine learning with Scikit-learn.
- StatsModels provides statistical testing, analysis, and modeling.

Below are some key features of Python that make it appropriate for data science:

- Because of the easy syntax, the programming is simpler to read.
- It is a simple language to learn.
- The widespread use of mathematics and data science, as well as community support.
- Code evaluation is simple with Python's interactive mode.
- It is very simple to expand the Python code by adding more modules from other compiled languages like C++ or C.

- It is possible to use Python, a potent language, with programs to offer a customisable interface.
- It enables programmers to run the code on Linux, Mac OS X, Windows, and UNIX.
- It is a high-level, open-source interpretive language. Python is useful to download, and add to programs without cost.

When it comes to addressing tasks and issues relating to data science, Python's users are never disappointed. Most data scientists already make use of Python's strength. Python is a popular, open-source, high-performance, object-oriented language with a number of advantages. Its benefits include ease of learning and debugging. Python comes with outstanding data science packages that programmers use daily to solve challenges.

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Conclusion

We have gone through some of Python's most important ideas and concepts. The majority of data science-related tasks are possible using third-party libraries and frameworks like Pandas, Matplotlib, Scikit-learn, and TensorFlow. Yet, to use such libraries, you should have a thorough understanding of Python's fundamentals and concepts. You must know the fundamentals of **Python for data science** to enhance your career as a data scientist. Join The IoT Academy to become an expert in Python. Start your journey towards a better career and opportunities.

5.E-Book: Learning Python for Everyone:

3.1 History of Python:

The programming language Python was conceived in the late 1980s,[1] and

its implementation was started in December 1989[2] by Guido van

Rossum at CWI in the Netherlands as a successor to ABC capable

of exception handling and interfacing with the Amoeba operating

system.[3] Van Rossum is Python's principal author, and his continuing

central role in deciding the direction of Python is reflected in the title given to

him by the Python community, *Benevolent Dictator for*

Life (BDFL).[4][5] (However, Van Rossum stepped down as leader on July 12,

2018.[6]). Python was named after the BBC TV show *Monty Python's Flying*

Circus.[7]

Python 2.0 was released on October 16, 2000, with many major new features, including a cycle-detecting garbage collector (in addition to reference counting) for memory management and support for Unicode. However, the most important change was to the development process itself, with a shift to a more transparent and community-backed process.[8]

Python 3.0, a major, backwards-incompatible release, was released on December 3, 2008[9] after a long period of testing. Many of its major features have also been backported to the backwards-compatible, though now-unsupported, Python 2.6 and 2.7.[10]

What is Python for everyone?

- Develop programs to gather, clean, analyze, and visualize data. This

  Specialization builds on the success of the Python for Everybody

  course and will introduce fundamental programming concepts

  including data structures, networked application program interfaces,

  and databases, using the Python programming language.

#Python

Python is a programming language widely used by Data Scientists.

Python has in-built mathematical libraries and functions, making it easier to calculate mathematical problems and to perform data analysis.

We will provide practical examples using Python.

To learn more about Python, please visit our Python Tutorial.

#Python Libraries

Python has libraries with large collections of mathematical functions and analytical tools.

In this course, we will use the following libraries:

- Pandas - This library is used for structured data operations, like import CSV files, create dataframes, and data preparation
- Numpy - This is a mathematical library. Has a powerful N-dimensional array object, linear algebra, Fourier transform, etc.
- Matplotlib - This library is used for visualization of data.
- SciPy - This library has linear algebra modules

We will use these libraries throughout the course to create examples.

2.1 Code submission (Github link) :

https://github.com/shivam808047/python_internship/blob/main/quiz%20game%20by%20python.py

2.2 Report submission(Github link):

5.My learnings….

What is Python?

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

Uses:

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

GOOD TO KNOW….

- The most recent major version of Python is Python 3, which we shall be using in this tutorial. However, Python 2, although not being updated with anything other than security updates, is still quite popular.

- In this tutorial Python will be written in a text editor. It is possible to write Python in an Integrated Development Environment, such as Thonny, Pycharm, Netbeans or Eclipse which are particularly useful when managing larger collections of Python files.

Python Syntax compared to other programming languages

- Python was designed for readability, and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.