



Welcome to Crafting Python Logics

A 2 days workshop by the Google Developer Student Club,
The Islamia University of Bahawalpur

```
lookup.KeyValue  
f.constant(['em  
=tf.constant([0  
ce = tf.lookup.StaticV  
init,  
num_oov_buckets=5)  
  
lookup.StaticVocabular  
initializer,  
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lookup_key_dtype=None  
name=None,  
experimental_is_sparse
```



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Speakers :

1. Muhammad Abuzar
2. Huzaifa Nawaz
3. Anas Bajwa

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Agenda :

1. Why Python?
2. Programming Fundamentals
3. Functional Programming
4. Data Types & Data Structures
5. Object Oriented Programming in Python
6. Intro to AI/ML with Tensorflow
7. Additional Resources

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Module 1:

1. Introduction to Python Programming Language
2. History
3. Scope
4. Why Python?

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Introduction

- Developed by Guido van Rossum
- Easy to learn
- Simple Syntax
- Interpreted Language
- Dynamically Typed



History



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- Development began in 1989 with a simplicity, readability and clean syntax philosophy.
- First version released in 1991
- Python3 released in 2008
- Developers started building tools and libraries in Python in early 2000s
- Tensorflow/Pytorch changed the game
- Python becomes a key player in AI revolution

- Data Sciences (Numpy, Pandas, Matplotlib, Seaborn)
- AI/ML (Keras, Scikit Learn, Tensorflow, Pytorch, Theano)
- Backend Web Frameworks (Django, Flask)
- Game Development (Pygame)
- Cloud Development and DevOps
- Embedded systems and IoT with MicroPython

- Python is one of the top 3 programming languages on GitHub along with Java and JavaScript
- It has seen a 22% increase in usage in 2022 and a massive 51% increase in 2023
- Django and Flask remain among the top web frameworks along with Express.js, Boot Spring and .NET Core



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Module 2 : Programming Fundamentals :

1. Syntax
2. Variable assignment
3. Loops
4. Data Types
5. Conditionals

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Module 3:

1. How to define a function in Python?
2. What is Functional Programming Paradigm?
3. Functional parameters or arguments

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Module 4:

1. What is Object Oriented Programming?
2. Difference between OOP & Functional Programming?
3. Classes & Objects
4. Four pillars of OOP
5. Is Python an Object Oriented Language?

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Module 5:

1. What are libraries?
2. Difference between a library and framework?
3. Intro to Numpy, Pandas and Matplotlib
4. What is Tensorflow

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Module 6 : AI

Intelligence is the ability to make logic, reasoning, adapt to different environments & solve problems.

Humans and other organisms have Organic Intelligence while the intelligence that we induce in computer systems to solve problems like humans do, is called Artificial Intelligence.

AI Systems learn just like us, we learn through experiments, results and observations. Machines learn through those results transformed into digital data.

Data is the new oil.

AI models learn through data

DS vs AI vs ML

Data Science is a field of Computer Sciences in which we manipulate, preprocess, transform, use and store data.

Since AI involves using that data so AI is a subfield of Data Sciences.

Machine learning refers to using statistical algorithms to learn from data and generalize to unseen data.

Machine Learning uses statistical algorithms while Deep Learning uses Artificial Neural Networks just like the ones found in our brain and the entire nervous system of every organism on the planet.

Classification vs Regression

There are basically 2 types of ML tasks :

1. Classification

2. Regression

Classification : differentiate b/w 2 or more classes; e.g differentiate between spam or non-spam emails, classify b/w images of dogs & cats

Regression : predict a value, can be any number; e.g given a car's features, find its fuel average or estimate the price of a house based on its attributes like num. of rooms, area in sq. ft etc



Any Questions ?