



# **SNS COLLEGE OF ENGINEERING**



**Kurumbapalayam(Po), Coimbatore – 641 107**

**Accredited by NAAC-UGC with 'A' Grade**

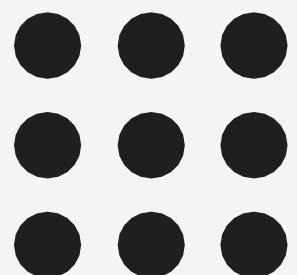
**Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai**

## **Department of Artificial Intelligence and Data Science**

**Course Name – Big Data Analytics  
III Year / V Semester**

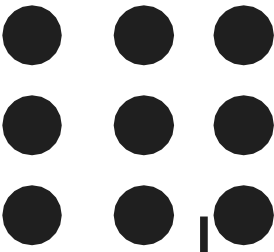
**Unit 2 – Data Science using Python**

**Topic 4- Scipy**





# Scipy



- SciPy is a free and open-source Python library used for scientific computing and technical computing.
- It is a collection of mathematical algorithms and convenience functions built on the NumPy extension of Python.
- It adds significant power to the interactive Python session by providing the user with high-level commands and classes for manipulating and visualizing data.



# Scipy



## Why use SciPy

- SciPy contains varieties of sub packages which help to solve the most common issue related to Scientific Computation.
- SciPy package in Python is the most used Scientific library only second to GNU Scientific Library for C/C++ or Matlab's.
- Easy to use and understand as well as fast computational power.
- It can operate on an array of NumPy library.



# Scipy



## Numpy VS SciPy

Numpy:

- Numpy is written in C and use for mathematical or numeric calculation.
- It is faster than other Python Libraries
- Numpy is the most useful library for Data Science to perform basic calculations.
- Numpy contains nothing but array data type which performs the most basic operation like sorting, shaping, indexing, etc.

## Scipy

- SciPy is built in top of the NumPy
- SciPy module in Python is a fully-featured version of Linear Algebra while Numpy contains only a few features.
- Most new Data Science features are available in Scipy rather than Numpy



# Scipy



## Sub-packages of SciPy:

- File input/output – `scipy.io`
- Special Function – `scipy.special`
- Linear Algebra Operation – `scipy.linalg`
- Interpolation – `scipy.interpolate`
- Optimization and fit – `scipy.optimize`
- Statistics and random numbers – `scipy.stats`
- Numerical Integration – `scipy.integrate`
- Fast Fourier transforms – `scipy.fftpack`
- Signal Processing – `scipy.signal`
- Image manipulation – `scipy.ndimage`



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**THANK YOU**