

Numpy Numerical Python

NumPy

explanation needed] by Jim Hugunin and called Numeric (also variously known as the "Numerical Python extensions" or "NumPy"), with influences from the APL family

NumPy (pronounced NUM-py) is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays. The predecessor of NumPy, Numeric, was originally created by Jim Hugunin with contributions from several other developers. In 2005, Travis Oliphant created NumPy by incorporating features of the competing Numarray into Numeric, with extensive modifications. NumPy is open-source software and has many contributors. NumPy is fiscally sponsored by NumFOCUS.

Travis Oliphant

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Travis Oliphant is an American data scientist, software developer, and entrepreneur known for his contributions to the Python scientific computing ecosystem. He is the primary creator of Numpy, a foundational package for numerical computation in Python, and a founding contributor to SciPy, which together form the bedrock on which modern AI and machine learning development was built. Oliphant is also a co-founder of NumFOCUS, a 501(c)(3) nonprofit charity in the United States that supports open-source scientific software. He is also a founder of several technology companies, including Anaconda, Quansight, and OpenTeams.

List of Python software

functions. NumPy serves as the backbone for a number of other numerical libraries, notably SciPy. De facto standard for matrix/tensor operations in Python. Pandas

The Python programming language is actively used by many people, both in industry and academia, for a wide variety of purposes.

CuPy

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CuPy is an open source library for GPU-accelerated computing with Python programming language, providing support for multi-dimensional arrays, sparse matrices, and a variety of numerical algorithms implemented on top of them.

CuPy shares the same API set as NumPy and SciPy, allowing it to be a drop-in replacement to run NumPy/SciPy code on GPU. CuPy supports Nvidia CUDA GPU platform, and AMD ROCm GPU platform starting in v9.0.

CuPy has been initially developed as a backend of Chainer deep learning framework, and later established as an independent project in 2017.

CuPy is a part of the NumPy ecosystem array libraries and is widely adopted to utilize GPU with Python, especially in high-performance computing environments such as Summit, Perlmutter, EULER, and ABCI.

CuPy is a NumFOCUS sponsored...

SciPy

versions of SciPy used Numeric as an array type, which is now deprecated in favor of the newer NumPy array code. In the 1990s, Python was extended to include

SciPy (pronounced "sigh pie") is a free and open-source Python library used for scientific computing and technical computing.

SciPy contains modules for optimization, linear algebra, integration, interpolation, special functions, fast Fourier transform, signal and image processing, ordinary differential equation solvers and other tasks common in science and engineering.

SciPy is also a family of conferences for users and developers of these tools: SciPy (in the United States), EuroSciPy (in Europe) and SciPy.in (in India). Enthought originated the SciPy conference in the United States and continues to sponsor many of the international conferences as well as host the SciPy website.

The SciPy library is currently distributed under the BSD license, and its development is sponsored and supported...

Python (programming language)

bind Qt and GTK to Python respectively; PyPy, a Python implementation originally written in Python; NumPy, a Python library for numerical processing. Jupyter

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation.

Python is dynamically type-checked and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-oriented and functional programming.

Guido van Rossum began working on Python in the late 1980s as a successor to the ABC programming language. Python 3.0, released in 2008, was a major revision not completely backward-compatible with earlier versions. Recent versions, such as Python 3.12, have added capabilities and keywords for typing (and more; e.g. increasing speed); helping with (optional) static typing. Currently only versions in the 3.x series are supported.

Python consistently ranks...

Numerical analysis

programming languages such as R (similar to S-PLUS), Julia, and Python with libraries such as NumPy, SciPy and SymPy. Performance varies widely: while vector

Numerical analysis is the study of algorithms that use numerical approximation (as opposed to symbolic manipulations) for the problems of mathematical analysis (as distinguished from discrete mathematics). It is the study of numerical methods that attempt to find approximate solutions of problems rather than the exact ones. Numerical analysis finds application in all fields of engineering and the physical sciences, and in the 21st century also the life and social sciences like economics, medicine, business and even the arts. Current growth in computing power has enabled the use of more complex numerical analysis, providing detailed and realistic mathematical models in science and engineering. Examples of numerical analysis include: ordinary differential equations as found in celestial mechanics...

List of numerical libraries

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This is a list of numerical libraries, which are libraries used in software development for performing numerical calculations. It is not a complete listing but is instead a list of numerical libraries with articles on Wikipedia, with few exceptions.

The choice of a typical library depends on a range of requirements such as: desired features (e.g. large dimensional linear algebra, parallel computation, partial differential equations), licensing, readability of API, portability or platform/compiler dependence (e.g. Linux, Windows, Visual C++, GCC), performance, ease-of-use, continued support from developers, standard compliance, specialized optimization in code for specific application scenarios or even the size of the code-base to be installed.

List of numerical-analysis software

manipulation, statistics, numerical simulation and visualization. Python with well-known scientific computing packages: NumPy, SymPy and SciPy. R is a

Listed here are notable end-user computer applications intended for use with numerical or data analysis:

Scikit-multiflow

scikit-multiflow is designed to interoperate with Python's numerical and scientific libraries NumPy and SciPy and is compatible with Jupyter Notebooks

scikit-multiflow (also known as skmultiflow) is a free and open source software machine learning library for multi-output/multi-label and stream data written in Python.

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