

1. Data Science and Machine Learning

Library	Purpose
NumPy	Numerical computing and multi-dimensional arrays.
Pandas	Data manipulation and analysis.
Matplotlib	Data visualization and plotting.
Seaborn	Statistical data visualization.
Scikit-learn	Machine learning algorithms and tools.
TensorFlow	Deep learning and AI models.
PyTorch	Deep learning with dynamic computation graphs.
Keras	High-level API for TensorFlow (easy-to-use DL).
Statsmodels	Statistical modeling and econometrics.
XGBoost	Gradient boosting for tabular data.

2. Web Development

Framework	Purpose
Django	Full-stack web development.
Flask	Lightweight and flexible web framework.
FastAPI	Modern, fast, and asynchronous APIs.
Pyramid	Scalable web applications.
Tornado	High-performance and scalable web applications.

3. Automation and Scripting

BeautifulSoup	Web scraping and parsing HTML/XML.
Selenium	Browser automation and testing.
Requests	HTTP requests handling.
PyAutoGUI	GUI automation (mouse, keyboard, etc.).
Scrapy	Advanced web scraping framework.

4. Game Development

Library	Purpose
Pygame	2D game development.
Panda3D	3D game engine.
PyOpenGL	OpenGL for rendering 3D graphics.

5. GUI Development

Framework	Purpose
Tkinter	Built-in GUI toolkit for Python.
PyQt	Advanced GUI development.
Kivy	Multi-platform applications, touch interface.
wxPython	Native-looking GUIs.

6. DevOps and Cloud

Library	Purpose
Paramiko	SSH and remote server management.
Boto3	AWS services integration.
Ansible	Configuration management and automation.

Fabric	Remote server management and deployment.
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7. Scientific Computing

Library	Purpose
SciPy	Advanced scientific computing (e.g., optimization).
SymPy	Symbolic mathematics and algebra.
AstroPy	Astronomy-related computations.
OpenCV	Computer vision tasks.

8. Cybersecurity and Networking

Library	Purpose
Scapy	Network packet manipulation.
Cryptography	Secure cryptographic methods.
Socket	Built-in library for network programming.
Pyshark	Network traffic analysis (Wireshark bindings).

9. Natural Language Processing (NLP)

Library	Purpose
NLTK	Basic NLP tasks.
SpaCy	Industrial-strength NLP with pre-trained models.
TextBlob	Simple text processing.
Gensim	Topic modeling and document similarity.
Hugging Face	Transformers for state-of-the-art NLP.

10. Blockchain and Cryptography

Library	Purpose
Web3.py	Interact with Ethereum blockchain.
eth-brownie	Smart contract development and testing.
PyCryptodome	Cryptographic algorithms.

11. Testing

Library	Purpose
PyTest	Testing frameworks for Python applications.
UnitTest	Built-in testing framework.
Robot Framework	Keyword-driven testing for automation.
