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2018-09-09

A categorized list of important Python modules

This list was created for my class at the University at Buffalo,
UBLIS 503 Computer Programming for LIS

The class uses Python as the programming language. The primary purpose of this list is to illustrate the breadth of support for software development and the breadth of applications available through third-party modules in Python, but this purpose can be achieved by selecting the most important modules in each category.

I compiled the collection of modules from a number of sources that provided a selection of 20 or so what, in the judgment of the source author, are important and widely used Python modules. This makes the list also a good starting point in a search for a Python module for a given task.

Most of the modules were checked in the pyPi master index (see sources on the last page). The module names are given in the capitalization that works in for *install* and *import*, but there may still be errors.

The category scheme is an ad-hoc scheme created for this list

Within a category, modules from the Standard library are listed first, then third-party modules recommended for installation for UBLIS503 (including all modules recommended for installation in the book *Automate the boring stuff with Python*), and then other third-party modules.

Contents

Category scheme	p. 3 - 4
Categorized list of modules	p. 5 -18
List of sources	p. 19

1 Operating system	4.4 KOS management
1.1 Generic operating system services	4.5 Metadata management, for ex. ID3
1.2 File and directory access	4.6 Structured markup processing (HTM, XML, RDF, JSON etc.)
1.3 Ports	4.7 GIS (Geographic Information System)
1.4 Distributed. computing	4.8 Document file formats (see also 7.1 Text)
1.5 Parallel computing (concurrent execution, threading, inter-process communication)	5 Free for expansion
1.6 Python for mobile devices	6 Networking and Web
1.7 Data security. Authentication	6.1 Network communication Internet protocols and support Internet data handling
1.8 Services for specific operating systems	6.1.1 Socket (see definition at end)
	6.1.2 Event logging
2 Support for programming	6.2 Websites
2.1 Development tools for Python	6.2.1 Web development framework
2.2 Debugging and profiling for Python programs	6.2.2 Overall website management
2.3 Custom Python interpreters and compilers	6.2.3 Support for Web page creation
2.4 Python language services	6.2.4 Browser-server communication
2.5 Software packaging and distribution Also creating stand-alone apps	6.2.5 Web browsing and scraping
2.6 Importing modules	6.3 Email
2.7 Support for working with programs in other languages (C, Java, JavaScript, ...) Foreign function interface	6.4 Message service
2.8 Flow-based programming (FBP)	6.5 Social media
3 Data types	7 Media
3.1 Date and time	7.0 Media general
	7.0.1 Multimedia services
4 Data management	7.0.1 Presentation services
4.1 Data externalization	7.1 Text (see also 4.8 Document file formats)
4.1.1 Data storage on external devices/ Data persistence. Archiving	7.1.1 Text processing services
4.1.2 Sending data	7.1.2 Regular expression operations
4.1.3 Data Compression	7.2 Graphics
4.1.4 Cryptographic services	7.3 User interface, GUI
4.1.5 Binary data services	7.3.1 Internationalization
4.1.6 Clipboard support	7.4 Audio / music
4.2 Databases	7.5 Game development
4.2.1 Indexing and searching. Information retrieval	
4.3 Spreadsheets, CSV files	

8 Business applications
8.1 Workflow
9 Applications in subject disciplines
9.1 Mathematics and scientific computation Numeric and Mathematical Modules
9.1.1 General math and computation
9.1.2 Scientific computation
9.1.3 Statistics and machine learning
9.1.4 Graphical data representation
9.2 Physics
9.3 Engineering
9.3.2 Architecture
9.4 Chemistry
9.5 Biomedicine
9.5.1 Biology
9.5.2 Medicine
9.6 Psychology and education
9.6.1 Psychology
9.6.2 Education
9.7 Social sciences
9.8 Humanities
9.8.1 Natural language processing

Socket. When a computer program needs to connect to a local or wide area network such as the Internet, it uses a software component called a socket. The socket opens the network connection for the program, allowing data to be read and written over the network. It is important to note that these sockets are software, not hardware, like a wall socket. So, yes, you have a much greater chance of being shocked by a wall socket than by a networking socket

List of modules

Category	Name	Description	Sources	
1 Operating system				
1.1 Generic Operating System Services	os	https://docs.python.org/3/library/os.html?highlight=os#module-os https://pypi.org/project/os0/ provides a portable way of using operating system dependent functionality	StdLib	0Std
	sys	Access system-specific parameters and functions	StdLib	0Std
	Fabric	https://pypi.org/project/Fabric/ A command-line tool for streamlining the use of SSH (Secure Shell) for application deployment or systems administration tasks. With it, you can execute local or remote shell commands, upload/download files, and even prompt running user for input, or abort execution.	quora, stone20	z
	pyExpect	http://pexpect.sourceforge.net/ Makes Python a better tool for controlling other applications.	50mod	z
	DocOpt	https://pypi.org/project/docopt/ Command line arguments parser, with declarative approach (docstring).	wikipython2018-08-20	z
1.2 File and directory access	fnmatch	https://docs.python.org/3/library/fnmatch.html?highlight=fnmatch#module-fnmatch support for Unix shell-style wildcards, which are not the same as regular expressions	StdLib	0Std
	glob	https://docs.python.org/3/library/glob.html?highlight=glob#module-glob finds all the pathnames matching a specified pattern according to the rules used by the Unix shell,	StdLib	0Std
	os.path	https://docs.python.org/3/library/os.path.html?highlight=os%20path#module-os.path some useful functions on pathnames. To read or write files see open(), and for accessing the file system see the os module	StdLib	0Std
	shutil	https://docs.python.org/3/library/shutil.html?highlight=shuti#module-shutil file copying and removal and other high-level operations on files	StdLib	0Std
	tempfile	https://docs.python.org/3/library/tempfile.html?highlight=tempfile#module-tempfile creates temporary files and directories with automatic cleanup	StdLib	0Std
	send2trash	https://pypi.org/project/Send2Trash/ Sends files to the Trash (or Recycle Bin) natively and on all platforms	Boring	503
	PyFilesystem	https://www.pyfilesystem.org/ Work with files and directories in archives, memory, the cloud, etc.	InfoWorld14	503
	Python Path	https://pypi.org/project/path.py/ Wraps the functionality of the os.path module and provides something more convenient.	wikipython2018-08-20	z

Category	Name	Description	Sources	
1.3 Ports	pySerial	https://github.com/pyserial/pyserial Serial Port Extension for Win32, OSX, Linux, BSD, Jython, IronPython	50mod	z
	pyUSB	http://bleyer.org/pyusb/ Module that interfaces to Future Technology Devices (FTDI) D2XX drivers.	50mod	z
	USPP	http://ibarona.googlepages.com/uspp Multi-platform module to access serial ports.	50mod	z
1.4 Distributed computing	psutil	https://github.com/giampaolo/psutil cross-platform library for retrieving information on running processes and system utilization (CPU, memory, disks, network) in Python.	wikipython2018-08-20	z
	Celery	http://www.celeryproject.org/ Distributed task queue for out of band processing/RPC and more.	wikipython2018-08-20	z
	iPython	https://pypi.org/project/ipython/ Facilitates parallel and distributed computing. Develop, execute, debug, and monitor parallel apps	quora	z
	PyRO	https://chmarti1.github.io/PYroMat/ powerful OO RPC	wikipython2018-08-20	z
	rpyc	http://rpyc.wikispaces.com/ Transparent RPC/distributed-computing framework. Remote Procedure Call (RPC) is a protocol that one program can use to request a service from a program located in another computer	wikipython2018-08-20	z
	sh	https://github.com/amoffat/sh https://pypi.org/project/sh/ sh is a full-fledged subprocess replacement for Python 2.6 - 3.6, PyPy and PyPy3 that allows you to call any program as if it were a function:	InfoWorld14, wikipython2018-08-20	z
	wmi	http://timgolden.me.uk/python/wmi/index.html Microsoft's implementation of Web-Based Enterprise Management (WBEM)	50mod	z
1.5 Parallel computing	ThreadPool	https://chrisarndt.de/projects/threadpool/ Intuitive approach to threads, well-explained.	wikipython2018-08-20	z
	asyncoro	http://asyncoro.sourceforge.net/ Asynchronous, concurrent programming framework with co-routines with thread-like interface	wikipython2018-08-20	z
	Gevent	http://www.gevent.org/ Co-routine-based network library	wikipython2018-08-20	z
1.6 Python for mobile devices	pyS60	http://sourceforge.net/projects/pys60 Python programming language for S60 mobile phones.	50mod	z
1.7 Data security. Authentication				

Category	Name	Description	Sources	
1.8 Services for specific operating systems	pywin32	https://github.com/mhammond/pywin32 provides some useful methods and classes for interacting with Windows.	50mod, tip20, stone2p, wikipedia2018-08-20	z
2 Support for programming	Ipython	https://ipython.readthedocs.io/en/stable/ A different animal altogether. Not a module, but a feature-rich programming environment very useful for serious Python developers. Do not confuse with iPython.	tip20, nforce21, stone20	z
	PyLibrary	https://sourceforge.net/projects/pylibrary/ Collection of Libraries useful for Python developers.	wikipedia2018-08-20	z
2.1 Development Tools for Python	2to3	https://docs.python.org/3/library/2to3.html?highlight=urllib#2to3fixer-urllib reads Python 2.x source code and applies a series of fixers to transform it into valid Python 3.x code	StdLib	0Std
	sys	https://docs.python.org/3/library/sys.html?highlight=sys#module-sys provides access to some variables used or maintained by the interpreter and to functions that interact strongly with the interpreter. It is always available	StdLib	0Std
2.2 Debugging and profiling	Behold	https://behold.readthedocs.io/en/latest/ Python debugging tool for large projects	infeworld14	z
2.3 Custom Python interpreters and compilers	Cython	http://cython.org/ Cython is an optimizing static compiler for both the Python programming language and the extended Cython programming language . The compiler generate very efficient C code from Cython code	InfoWorld14, wikipedia2018-08-20	z
	numba	https://pypi.org/project/numba/ Compiles python code to CPU and/or GPU for performance boosts	umd	z
2.4 Python language services				
2.5 Software packaging and distribution	py2app	https://wiki.python.org/moin/MacPython/py2app Creates stand-alone apps (like py2exe for Mac)	wikipedia2018-08-20	z
	Py2exe	http://www.py2exe.org/ Converts python scripts into executable Windows programs that run without a python installation.	wikipedia2018-08-20	z
	PyInstaller	http://www.pyinstaller.org/ Packages Python programs into stand-alone executables, under Windows, Linux and Irix.	wikipedia2018-08-20	z
2.6 GIS	GIS web services	https://wiki.python.org/moin/GIS/Web_services Not a module but a reference link. GIS Web services packages tools	wikipedia2018-08-20	z
2.7 Support for working with programs in other languages	PyObjC	https://pythonhosted.org/pyobjc/ Bridge between the Python and Objective-C. Most important usage of this is writing Cocoa GUI applications on Mac OS X in pure Python	wikipedia2018-08-20	z

Category	Name	Description	Sources	
	pyobjc (on OS X only)	https://pypi.org/project/pyobjc/ A bridge between Python and Objective-C. It allows full featured Cocoa applications to be written in pure Python. It is also easy to use other frameworks containing Objective-C class libraries from Python and to mix in Objective-C, C and C++ source.	Boring	503
	python3-xlib (on Linux only)	https://pypi.org/project/python3-xlib/ X client library for Python programs. It is written entirely in Python, specifically for Python 3.	Boring	503
	Ctypes	https://docs.python.org/3/library/ctypes.html A foreign function library for Python	50mod, wikipython2018-08-20	z
	Java Scripting	https://wiki.python.org/moin/ScriptingJava Not a module but a reference link. Page lists tools for Java/Python interoperability.	wikipython2018-08-20	z
2.8 Flow-based programming (FBP)				
3 Data types				
3.1 Date and time	datetime	https://docs.python.org/3/library/datetime.html?highlight=datetime#module-datetime supplies classes for manipulating dates and times in both simple and complex ways. While date and time arithmetic is supported, the focus of the implementation is on efficient attribute extraction for output formatting and manipulation. For related functionality, see also the time and calendar modules	StdLib	0Std
	time	https://docs.python.org/3/library/time.html?highlight=time#module-time provides various time-related functions. See also the datetime and calendar modules	StdLib	0Std
	calendar	https://docs.python.org/3/library/calendar.html For printing out calendars and related functions	StdLib	0Std
	python-dateutil	https://pypi.org/project/python-dateutil/ Provides powerful extensions to the datetime module.	wikipython2018-08-20	z
4 Data management				
4.1 Data externalization	pickle	https://docs.python.org/3/library/pickle.html?highlight=pickle#module-pickle https://pypi.org/project/pickle5/ “Pickling” converts a Python object hierarchy into a byte stream, (that can be stored on an external storage device), and “unpickling” converts a byte stream (from a binary file or bytes-like object) is back into an object hierarchy.	StdLib	0Std

Category	Name	Description	Sources	
	pickletools	https://pypi.org/project/micropython-pickletools/ Contains extensive comments about the pickle protocols and pickle-machine opcodes, as well as some useful functions	StdLib	0Std
4.1.1 Data storage on ext. devices/Data persistence. Archiving				
4.1.2 Sending data				
4.1.3 Data Compression				
4.1.4 Cryptographic services	cryptography	Python and Cryptography Several modules for hashing and even basic ssl support which is integrated into the socket module.	wikipython2018-08-20	z
4.1.5 Binary data services				
4.1.6 Clipboard support	pyperclip	https://github.com/asweigart/pyperclip https://pypi.python.org/pypi/pyperclip Python module for cross-platform clipboard functions.	Boring	503
4.2 Database	sqlite	https://docs.python.org/3/library/sqlite3.html?highlight=sqlite#module-sqlite3 a C library that provides a lightweight disk-based database that doesn't require a separate server process and allows accessing the database using a nonstandard variant of the SQL query language	StdLib	0Std
	SQLAlchemy	http://www.sqlalchemy.org a library with well-known enterprise-level patterns. Efficient and high-performing database-access. .	50mod, quora, tip20. stone 20	503
	DatabaseInterfaces	https://wiki.python.org/moin/DatabaseInterfaces A reference link Lists many Python interfaces to relational and non-relational database backends	wikipython2018-08-20	z
	DatabaseProgramming	https://wiki.python.org/moin/DatabaseProgramming A reference link. See also for guidance on choosing a database backend system	wikipython2018-08-20	z
	Peewee	http://docs.peewee-orm.com/en/latest/peewee/quickstart.html https://www.fullstackpython.com/object-relational-mappers-orms.html An object-relational mapper (ORM) is a code library that automates the transfer of data stored in relational databases tables into objects that are more commonly used in application code	InfoWorld14	z
	PyGreSQL	http://www.pygresql.org Module that interfaces to a PostgreSQL database.	50mod	z
	SQLObject	http://sqlobject.org/ Object oriented access to several different database systems	wikipython2018-08-20	z
4.2.1 Indexing and searching. Info retrieval	InformationRetrieval	https://wiki.python.org/moin/InformationRetrieval Not a module but a reference link. Various retrieval software that can be used with Python	wikipython2018-08-20	z
4.3 Spreadsheets, CSV files	csv	https://pypi.org/project/csv/ Write and read tabular data to and from delimited files	StdLib	0Std

Category	Name	Description	Sources	
	openpyxl	https://pypi.org/project/openpyxl/ Read/write Excel 2010 xlsx/xlsm/xltx/xltm files.	Boring	503
4.4 KOS management	pyWordNet	http://osteelle.com/projects/pywordnet/ Interface to the <i>WordNet</i> database of word meanings and lexical relationships	50mod	503
	PyMedTermino	https://pythonhosted.org/PyMedTermino/tuto_en.html Medical Terminologies for Python: SNOMED CT, ICD10, MedDRA, CDF, UMLS and VCM icons		z
	collective.taxonomy	https://pypi.org/project/collective.taxonomy/ Create, edit and use hierarchical taxonomies in Plone the use of the product will not require any Python programming Requires the Plone open-source free CMS written in Python		z
4.5 Metadata management	pymarc	http://python.org/pypi/pymarc https://acrl.ala.org/techconnect https://acrl.ala.org/techconnect/post/hacking-in-python-with-pymarc/ https://marcredit.reeset.net/features process MARC records from Python		503
	eyeD3	https://eyed3.readthedocs.io/en/latest/ Python module and program for processing ID3 tags.	wikipython2018-08-20	z
	hsaudiotag	https://pypi.org/project/hsaudiotag3k/#downloads Read metadata (bitrate, sample rate, duration and tags) from mp3, mp4, wma, ogg, flac and aiff files	wikipython2018-08-20	z
	ID3Reader	https://nedbatchelder.com/code/modules/id3reader.html Reads ID3 metadata tags in MP3 files.	wikipython2018-08-20	z
	mutagen	https://code.google.com/archive/p/mutagen/ Handle audio metadata	wikipython2018-08-20	z
	pytagger	https://liquidx.net/pytagger/ Tag reader and writer implemented purely in Python	wikipython2018-08-20	z
	pytaglib	https://pypi.org/project/pytaglib/ Reads and writes mp3, ogg, flac, mpc, speex, opus, WavPack, TrueAudio, wav, aiff, mp4 and asf files.	wikipython2018-08-20	z
4.6 Structured markup processing	RDFLibraries	https://wiki.python.org/moin/RdfLibraries A reference listing several RDF processing solutions	wikipython2018-08-20	z
	json	https://pypi.org/project/json5/ https://docs.python.org/3/library/json.html?highlight=json#module-json Encode and decode the JSON format JSON (JavaScript Object Notation) is a lightweight data interchange format inspired by JavaScript object literal syntax.	StdLib	0Std
	install beautifulsoup4 <i>import bs4</i>	http://crummy.com/software/BeautifulSoup An excellent XML- and HTML- parsing library for beginners, providing Pythonic idioms for iterating, searching, and modifying the parse tree. Very useful for beginners.	50mod, Boring, quora, tip20, nforce21, stone20, wikipython2018-08-20	503

Category	Name	Description	Sources	
	simplejson	https://simplejson.readthedocs.io/en/latest Fast, correct and extensible json encoder and decoder	nforce21	503z
	Amara	https://pypi.org/project/Amara/ tools you can trust to conform with XML standards without losing the familiar Python feel	wikipython2018-08-20	z
	elementtree	http://effbot.org/zone/element-index.htm a simple but flexible container object, designed to store hierarchical data structures, such as simplified XML infosets, in memory	wikipython2018-08-20	z
	pyquery	https://pythonhosted.org/pyquery/ Implements jQuery in Python; faster than BeautifulSoup, apparently.	wikipython2018-08-20	z
	PythonXML	https://wiki.python.org/moin/PythonXml Reference: a list of available XML processing solutions.	wikipython2018-08-20	z
4.7 GIS	arrow	https://pypi.org/project/arrow/ Date and time. perfect replacement to datetime and time modules in the Standard Library	nforce21	503
	geoname	https://github.com/geopy/geopy/blob/master/geopy/geocoders/geonames.py Parses Geonames.org datasets into clean & simple OGR shapefile format.	50mod	z
4.8 Document file formats	PyPDF2	https://pypi.org/project/pyPdf/ A PDF toolkit. Extract document information (title, author, ...), split documents page by page merge documents page by page, crop pages, merge multiple pages into a single page, encrypt and decrypt PDF files.	Boring	
4.8 Document file formats	python-docx	https://pypi.org/project/python-docx/ Create and update Microsoft Word (.docx) files.	Boring, inforworld14	
	EbookLib`	https://github.com/aerkalov/ebooklib Manage EPUB2/EPUB3 and Kindle files	InfoWorld14	
	PyX	http://pyx.sourceforge.net/ Postscript and PDF output	wikipython2018-08-20	z
	EbookLib`	https://github.com/aerkalov/ebooklib Manage EPUB2/EPUB3 and Kindle files	InfoWorld14	
5 Free for expansion				
6 Networking and Web`				
6.1 Network communication	urllib2	https://docs.python.org/3/library/2to3.html?highlight=urllib#2to3fixer-urllib	StdLib	0Std

Category	Name	Description	Sources	
6.1 Network communication	requests	http://www.python-requests.org/en/master https://pypi.org/project/requests/ HTTP for humans. Send HTTP/1.1 requests, add headers, form data, multipart files, and parameters with simple Python dictionaries. It also lets you access the response data in the same way. An improvement upon urllib etc., for sending HTTP requests	Boring, quora, tip20, nforce21, stone20, wikipython2018-08-20	503
	urllib3	https://pypi.org/project/urllib3/ urllib3 is a powerful, sanity-friendly HTTP client for Python. Much of the Python ecosystem already uses urllib3 and you should too. urllib3 brings many critical features that are missing from the Python standard libraries		z
	apache-libcloud	https://libcloud.apache.org Interact with many of the popular cloud service providers using a unified API	InfoWorld14	z
	httplib2	https://code.google.com/archive/p/httplib2/ A comprehensive HTTP client library that supports many features left out of other HTTP libraries, like httplib on the standard library.	wikipython2018-08-20	z
	scapy	https://scapy.net A packet sniffer and analyzer. Sniffers are programs that can capture/sniff/detect network traffic packet by packet and analyze them for various reasons	tip20, nforce21	z
	Twisted	http://twistedmatrix.com https://twistedmatrix.com/trac/wiki An event-driven networking engine. Supports implementation of custom network applications The most important tool for any network application developer. It has a very beautiful API and is used by a lot of famous python developers.	50mod, tip20, quora, nforce21, stone20, wikipython2018-08-20	z
6.1.1 Socket	socket	https://docs.python.org/3/library/socket.html?highlight=socket#module-socket provides access to the BSD socket interface	StdLib	0Std
6.1.2 Event logging	logging	https://pypi.org/project/logging/ https://docs.python.org/3/library/logging.html?highlight=logging#module-logging Flexible event logging system for applications and libraries	StdLib	0Std
6.2 Websites				
6.2.1 Web development framework	web2py	http://web2py.com/ https://pypi.org/project/web2py/ full-stack framework for rapid development and prototyping of secure database-driven web-based applications, written and programmable in Python To find more like this, search Google for Python frameworks	wikipython2018-08-20	z
	Django	https://www.djangoproject.com/ High-level web framework.	wikipython2018-08-20	z
	Flask	https://pypi.org/project/Flask/ A web framework, Flask is built with a small core and many extensions. A Web framework is a collection of packages or modules which allow developers to write Web applications (see Web Applications) or services	quora, stone20, wikipython2018-08-20	z

Category	Name	Description	Sources	
	Pylons	https://www.pylonshq.com/ A lightweight web framework emphasizing flexibility and rapid development.	wikipython2018-08-20	z
	TurboGears	http://www.turbogears.org/ Rapid web development megaframework.	wikipython2018-08-20	z
	web2py	http://web2py.com/ High-level framework for agile development.	wikipython2018-08-20	z
6.2.2 Website management				
6.2.3 Support for web page creation	form	http://www.formencode.org/en/latest/ Validation and form generation package	wikipython2018-08-20	z
	lxml	https://lxml.de/ Powerful and Pythonic XML processing library combining libxml2/libxslt with the ElementTree API.	wikipython2018-08-20	z
6.2.4 Browser-Server communication	cgi	https://docs.python.org/3/library/cgi.html?highlight=cgi#module-cgi Support module for Common Gateway Interface (CGI) scripts. Defines a number of utilities for use by CGI scripts written in Python	StdLib	0Std
	wsgiref	https://docs.python.org/3/library/wsgiref.html?highlight=wsgiref#module-wsgiref a reference implementation of the WSGI specification that can be used to add WSGI support to a web server or framework. WSGI = Web Server Gateway Interface	StdLib	0Std
6.2.5 Web browsing and scraping	selenium	https://pypi.org/project/selenium/ Automate web browser interaction from Python	Boring	503
	Scrapy	https://scrapy.org/ A high-level Web Crawling and Web Scraping framework/ Build and run web spiders. Fast, high-level screen scraping and web crawling. Best of breed	quora, tip20, InfoWorld 14, nforce21, stone20	503
	mechanize	http://wwwsearch.sourceforge.net/mechanize/ Stateful programmatic web browsing in Python.	50mod	z
	scrape	http://zesty.ca/python/scrape.html Module for web browsing and scraping.	50mod	z
6.3 Email	imapclient	https://pypi.org/project/IMAPClient/ Features: Arguments and return values are natural Python types; IMAP server responses are fully parsed and readily usable	Boring	503
	pyzmail	https://pypi.org/project/pyzmail/ Parse, compose and send emails. pyzmail hides the difficulties of managing the MIME structure and of the encoding/decoding for internationalized emails.	Boring	503
6.4 Message service	mpi4py	https://pypi.org/project/mpi4py/ MPI (Message Passing Interface) interface	umd	z

Category	Name	Description	Sources	
6.5 Social media				
7. Media	twilio	https://pypi.org/project/twilio/ Use the Twilio REST API and generating valid TwimL (the Twilio Markup Language).	Boring	503
7.0 Media general				
7.0.1 Multimedia services				
7.0.2 Presentation services	rst2s5.py	http://docutils.sourceforge.net/docs/user/tools.html#rst2s5-py Create HTML slides from .rst files. not n pyPi	wikipython2018-08-20	z
7.0.2 Presentation services	Slippy	https://seld.be/notes/introducing-slippy-html-presentations For your Python presentations in browser not n pyPi	wikipython2018-08-20	z
7.1 Text (see also 4.8)				
7.1.1 Text processing	pyrtf	http://pyrtf.sourceforge.net/ Set of classes that make it possible to produce Rich Text Format documents	50mod	z
7.1.2 Regular expression operations	re	https://docs.python.org/3/library/re.html?highlight=re#module-re provides regular expression matching operations similar to those found in Perl	StdLib	0Std
7.2 Graphics	opencv-python	https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_tutorials.html Use OpenCV (Open Source Computer Vision Library) from Python		
	pillow	https://github.com/python-pillow/pillow https://www.pythonforbeginners.com/gui/how-to-use-pillow A user-friendly module based on PIL (Python Imaging Library), Must-have for images	Boring, quora, tip20. InfoWorld14, stone20	503
	gdmodule	http://newcenturycomputers.net/projects/gdmodule.html https://en.wikipedia.org/wiki/GD_Graphics_Library Module wrapper for the GD graphics library.	50mod	z
	PIL	http://www.pythonware.com/products/pil/ Supports many file formats, and provides powerful image processing and graphics capabilities.	50mod, wikipython2018-08-20	z
	pyqtgraph	http://www.pyqtgraph.org/ Pure-python graphics library for scientific applications with image/video display, multidimensional image slicing, and interactive manipulation tools.	wikipython2018-08-20	z
	pyOpenGL	http://pyopengl.sourceforge.net https://www.opengl.org/ Cross platform binding Python to OpenGL (open graphics library) and related APIs. 2-D and 3-D vector graphics.	50mod	z
	VideoCapture	http://videocapture.sourceforge.net Python Extension for Accessing Video Devices	50mod	z

Category	Name	Description	Sources	
	Vpython	http://vpython.org Create navigable 3D displays and animations.	50mod	z
7.3 User interface, GUI	pyautogui	https://pypi.org/project/PyAutoGUI/ A cross-platform GUI (Graphical User Interface) automation Python module for human beings. Used to programmatically control the mouse & keyboard.	Boring	503
	wxPython	http://wxpython.org A GUI toolkit. A wrapper around wxWidgets for Python.	50mod, quora, tip20, nforce21, stone20, wikipython2018-08-20	503
	Gooy	https://github.com/chriskiehl/Gooy Turn (almost) any Python 2 or 3 Console Program into a GUI application with one line	InfoWorld14	z
	Pmw	http://pmw.sourceforge.net A toolkit for building high-level compound widgets in Python using the Tkinter module.	50mod, wikipython2018-08-20	z
	pyGtk	http://www.pygtk.org Create programs with a GUI (Graphical User Interface).	50mod, quora, tip20, stone20, wikipython2018-08-20	z
	Pyjamas-Desktop	https://wiki.python.org/moin/PyjamasDesktop a cross-platform framework and applications widget set for the desktop.	wikipython2018-08-20	z
	pyQT	https://riverbankcomputing.com/software/pyqt/intro A GUI toolkit. Tip20: second choice after wxPython.	tip20, wikipython2018-08-20	z
	PySimpleGUI	https://wiki.python.org/moin/www.PySimpleGUI.com Wrapper for TkInter that makes customer GUI development easy and compact	wikipython2018-08-20	z
	pywinauto	https://github.com/pywinauto/pywinauto send mouse and keyboard actions to windows dialogs and controls, and more	50mod	z
7.3.1 Internationalization				
7.4 Audio / music	FMOD	http://www.fmod.org/ https://en.wikipedia.org/wiki/FMOD FMOD is a proprietary sound effects engine and authoring tool for video games and applications. Possible to access from Python, see pySonic	50mod	z
	pySonic	http://pysonic.sourceforge.net/ Python wrapper around the high performance, cross platform FMOD sound library. May need to get from pysonic Web page	50mod	z
7.5 Game development	Pygame	http://www.pygame.org/news.html Two-dimensional game development. An extremely easy interface to the Simple Directmedia Library (SDL) platform-independent graphic, audio, and input libraries.	50m,od quora, tip20, InfoWorld14, nforce2, stone20, wikipython2018-08-20	503

Category	Name	Description	Sources	
	pyglet	http://www.pyglet.org A three-dimensional animation and game creation engine. Object-oriented. For visually rich applications.	50mod, quora, tip20, nforce21, stone20	z
	PySoy	https://pypi.org/project/PySoy/ PySoy is a 3d cloud game engine for Python 3	50mod	z
8 Business applications				
8.1 Workflow	Goflow	https://github.com/zen4ever/django-goflow A workflow engine for Django, with same design as openflow. Not in pyPi	wikipython2018-08-20	z
8.1 Workflow	python-openflow	https://github.com/kytos/python-openflow Library to parse and generate OpenFlow messages	wikipython2018-08-20	z
9 Applications in subject disciplines				
9.1 Mathematics and scientific computation	nose	https://github.com/nose-devs/nose Delivers an alternate test discovery and running process for unittest. This intends to mimic py.test's behavior as much as it can. Must have if you do test driven development	quora, tip20, nforce21, stone20	z
9.1.1 General math and computation	decimal	https://docs.python.org/3/library/decimal.html?highlight=decimal#module-decimal provides support for fast correctly-rounded decimal floating point arithmetic. It offers several advantages over the float datatype.	StdLib	0Std
	math	https://docs.python.org/3/library/math.html?highlight=math#module-math provides access to the mathematical functions defined by the C standard	StdLib	0Std
	random	https://docs.python.org/3/library/random.html?highlight=random#module-random pseudo-random number generators for various distributions	StdLib	0Std
	numpy	https://docs.scipy.org/doc/numpy/reference/ Advanced math functions and a rudimentary scientific computing package. Multidimensional arrays	50mod, quora, tip20, InfoWorld14, nforce21, stone20, umd, wikipython2018-08-20	503
	Numdifftools	https://pypi.org/project/Numdifftools/ Numerical Analysis	umd	z
	Theano	https://pypi.org/project/Theano/ define and evaluate expressions involving multi-dimensional arrays	umd	z
	sympy	http://www.sympy.org/en/index.html Symbolic math. With very simple and comprehensible code that is easily extensible, SymPy is a full-fledged Computer Algebra System (CAS). Does algebraic evaluation, differentiation, expansion, complex numbers, etc.	quora, tip29, nforce21, stone20	z

Category	Name	Description	Sources	
9.1.2 Scientific computation	scipy	http://www.scipy.org User-friendly and efficient numerical routines, including optimization and numerical integration. Tools for scientific computing. Uses NumPy	50mod, tip20, nforce21, quora, stone2, umd, wikipython2018-08-20	503
	PyIMSL	https://wiki.python.org/moin/PyIMSL Collection of Python wrappers to the mathematical and statistical algorithms in the IMSL C Numerical Library	wikipython2018-08-20	z
9.1.3 Statistics and machine learning	pandas	https://pypi.org/project/pandas/ Pandas is a must for data-science. It provides fast, expressive, and flexible data structures to easily (and intuitively) work with structured (tabular, multidimensional, potentially heterogeneous) and time-series data.	quora, stone20	503
	rpy2	http://rpy.sourceforge.net/ Python bindings for R. R is a well-known, open source (GPL 2) statistical package. RPy has two versions. Version 2 is still in development but is already usable.	wikipython2018-08-20	z
	scikit-learn	http://scikit-learn.org/stable/index.html Machine learning. Preprocessing, classification, regression, clustering, dimension reduction, model selection. random forests	nforce21	z
	tensorflow	https://www.tensorflow.org an open source machine learning framework for everyone. Complex computations. Machine learning Originally developed in the Google AI (artificial intelligence) team. The computations implemented in this module are at the heart of Google's machine learning	nforce21	z
9.1.4 Graphical data representation	chaco	http://docs.enthought.com/chaco/ Creates interactive plots	wikipython2018-08-20	z
	gnuplot-py	http://gnuplot-py.sourceforge.net/ A Python interface to the gnuplot plotting program	wikipython2018-08-20	z
	matplotlib	https://matplotlib.org/ Numerical plotting. Very useful for any data scientist or any data analyzer	50mod, quora, tip20, nforce21, stone20, umd, wikipython2018-08-20	z
	Plotly	https://plot.ly/ Python plotting library for collaborative, interactive, publication-quality graphs	wikipython2018-08-20	z
	veusz	https://veusz.github.io/ a 2D and 3D scientific plotting package, designed to create publication-ready PDF and SVG output	wikipython2018-08-20	z
	reportlab	https://www.reportlab.com/ includes a charting package	wikipython2018-08-20	z
	vpython	http://vpython.org/ Offers real-time 3D output, is easily usable by novice programmers, excellent for physics.	wikipython2018-08-20	z

Category	Name	Description	Sources	
9.2 Physics				
9.3 Engineering				
9.3.2 Architecture				
9.4 Chemistry				
9.4 Chemistry	PyOpenMM	OpenMM interface	umd	
9.5 Biomedicine				
9.5.1 Biology	BioPython	https://pypi.org/project/biopython/ modules for Biology research	umd	z
9.5.2 Medicine				
9.6 Psychology and education				
9.6.1 Psychology				
9.6.2 Education				
9.7 Social sciences				
9.8 Humanities				
9.8.1 Natural language processing	nlk	http://www.nltk.org/ Comprehensive natural language processing toolkit	tip20, nforce21	503

Sources for UBLIS 503 Python module list	
50mod 2008-06-11	https://www.catswhocode.com/blog/python-50-modules-for-all-needs . Check the website for the module to find newest version or altogether new modules. Omitted some modules that are obsolete
Boring 2915	Automate the boring stuff with Python.. Included the modules mentioned in the book as specially useful
quora 2018-05-13	https://www.quora.com/What-are-some-of-the-most-useful-Python-libraries Has more information about each module listed. Included all
tip20 2013-07-3-	https://www.quora.com/What-are-some-of-the-most-useful-Python-libraries Has more information about each module listed. Screenshots, diagrams. Included all
stone20 2015-10-16	http://blog.stoneriverelearning.com/20-great-python-libraries-you-must-know/ Has more information about each module listed. Screenshots, diagrams. Included all
InfoWorld14 2017-02-07	https://www.InfoWorld.com/article/3164409/application-development/hidden-gems-14-python-libraries-too-good-to-overlook.html#slide3 . Included all
Top14 2018-06-03	https://Pythontips.com/2018/06/03/top-14-most-famous-python-libraries-frameworks/ Info on each library included. Included all
nforce21 2017-07-01	https://noeticforce.com/best-python-libraries Long descriptions. Included all
umd	https://www.glue.umd.edu/hpcc/help/software.html#python
	https://en.wikipedia.org/wiki/List_of_Python_software not included. Different classification
wikipython 2018-08-20	https://wiki.python.org/moin/UsefulModules 2018-08-20 14:00:38 by PySimpleGUI). Lists many modules arranged by its own categories. Some modules described. Included most
	https://en.wikipedia.org/wiki/List_of_Python_software . just as reference. Packages/modules and entire apps written in Python
	https://data36.com/python-libraries-packages-data-scientists/ gives good descriptions of modules mentoned here
StdLib by category	https://docs.python.org/3/library/index.html A list of Python Standard Library modules arranged by category, each module linked to detailed documentation. Best reference for Standard Library. Only a few of these modules are included in the list. The Standard Library extends built-in features. It empaszes features and tools that support program development
StdLib alpha	https://docs.python.org/3/py-modindex.html A list of Pythons Standard Library modules arranged alphabetically, each module linked to detailed description..
pyPi	https://pypi.org/ The ultimate reference Find, install and publish Python packages with the Python Package Index. The most complete and "official" index. >150K projects

