# Employment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Technology | Banks | Investment | Insurance/Pension | Consultants |
| International | | | | |
| London stock exchange group LSEG | Barclays | Morgan Stanley | Lloyds market | [WTW](https://careers.wtwco.com/) |
| Bloomberg | Citi group | Goldman Sachs | Chubb | [EY](https://careers.ey.com/) |
| Factset | HSBC | Blackrock | Admiral Group | [PWC](https://www.pwc.com/gx/en/careers/experienced-job-search.html) |
|  | Lloyds bank | Blackstone | Legal and general | [Deloitte](https://apply.deloitte.co.uk/UKCareers/) |
|  | JPmorgan | Man Group | Allianz | [KPMG](https://www.kpmgcareers.co.uk/search) |
|  | US Bank | AQR Capital Management | Axa | [BCG](https://careers.bcg.com/) |
|  | USBancorp | Bridgewater Associates | Royal London | [Mckinsey & Co](https://www.mckinsey.com/careers/search-jobs) |
|  | Natwest | Citadel | Now Pensions |  |
|  |  | DE Shaw group | Standardlife |  |
|  |  | Hudson river trading | AON |  |
|  |  | Jane street |  |  |
|  |  | Millenium Management |  |  |
|  |  | Renaissance Technologies |  |  |
|  |  | Two Sigma |  |  |
|  |  | Jump Trading |  |  |
|  |  | Balyasny Asset management |  |  |
|  |  | Western Asset management |  |  |
|  |  | Optiver |  |  |
|  |  | Squarepoint |  |  |
|  |  | Point72 |  |  |
|  |  | Graham Capital management |  |  |
|  |  | Fidelity |  |  |
|  |  | Invesco |  |  |
|  |  | State street |  |  |
|  |  | Exxon mobil |  |  |
|  |  | CME Group |  |  |
|  |  | Chicago trading company |  |  |
|  |  | DRW |  |  |
|  |  | Dimensional fund advisors |  |  |
| Danish | | | | |
| [Edlund](https://www.edlund.dk/Karriere) | [Danske bank](https://ejqi.fa.em2.oraclecloud.com/hcmUI/CandidateExperience/en/sites/CX_1001) | Saxo | Pensam | Danmarks Statistik |
| [Keylane](https://careers.keylane.com/) | [Nordea](https://www.nordea.com/en/careers/vacant-positions) | Nordnet | Sampension |  |
|  | [Nykredit](https://www.nykredit.com/karriere/stillinger/) | Carnegie | Alm brand |  |
|  | [Arbejdernes landsbank](https://www.al-bank.dk/om-banken/karriere/soeg-job/ledige-stillinger) |  | Tryg |  |
|  | [Lån&spar](https://lsb.easycruit.com/) |  | ATP |  |
|  | [National banken](https://www.nationalbanken.dk/da/karriere) |  | Lægernes Pension |  |
|  | Jyske Bank |  |  |  |
|  | Sydbank |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Recruiters and job boards** | | | | |
| **DK, UK, and US** | | | | |
| Jobindex | | | | |
| Linkedin | | | | |
| Indeed | | | | |
| Glassdoor | | | | |
| Randstad | | | | |
| EfinancialCareers | | | | |
| **UK only** | | | | |
| UK government job search | | | | |
| Monster | | | | |
| Hays | | | | |
| Selby Jennings | | | | |
| Michael Page | | | | |
| Robert Half | | | | |
| Morgan Mckinley | | | | |
| Goodman Masson | | | | |
| Robert Walters | | | | |
| Hunter Bond | | | | |
| **Specific for Quantitative finance** | | | | |
| Durlston Partners | | | | |
| Anson Mccade | | | | |
| Paragon Alpha | | | | |
| Eka finance | | | | |
| Oxford Knight | | | | |
| **IT and software development** | | | | |
| Oliver Bernard | | | | |
| Oliver James | | | | |
| **General finance** | | | | |
| Mondrian Alpha | | | | |
| Mark Sattin | | | | |
| Darthmouth Partners | | | | |
| **Insurance and actuarial work** | | | | |
| [Eames Consulting](https://www.eamesconsulting.com/jobs) | | | | |
| [Arthur Recruitment](https://arthur.co.uk/live-jobs/) | | | | |
| [HFG Insurance recruitment](https://www.hfg.co.uk/jobs) | | | | |
| [Bruin](https://www.bruinfinancial.com/find-a-job/) | | | | |
| **Random and smaller companies** | | | | |
| [Shift F5 recruitment](https://shiftf5.co.uk/) |  |  |  |  |
| [Chapman recruitment](https://chapman-recruitment.com/) |  |  |  |  |
| [Ashdown Group](https://www.ashdowngroup.com/) |  |  |  |  |
| [In house Recruitment](https://www.inhouserecruitment.co.uk/) |  |  |  |  |
| [Securus recruitment](https://www.securusrecruitment.com/) |  |  |  |  |

Python

**Useful for fundamental python, without a specific purpose**

[Python coding guide](https://python-guide-chinese.readthedocs.io/zh_CN/latest/writing/style.html)    The guide to good coding written in python

[Pandas guide](https://pandas.pydata.org/docs/user_guide/index.html)Pandas user guide with a walkthrough of the package

[Graph gallery](https://www.python-graph-gallery.com/)                                                                Meaning you can find all the graphs you could do with matplotlib.

[Color palettes for graphs](https://coolors.co/palettes/popular),                                            Very useful when you need to figure out how you want to portray your data visualizations

[3dplot and animation](https://pythonmatplotlibtips.blogspot.com/2018/01/combine-3d-two-2d-animations-in-one-figure-artistdanimation.html)Very useful, if you want to either make 3dplots or animations with matplotlib

[Scikit regression models](https://scikit-learn.org/stable/modules/linear_model.html#generalized-linear-models)All of the regression models you can get with scikit learn

[Statsmodel library walkthrough](https://www.statsmodels.org/stable/examples/index.html)Very useful for various needs with statistics

[Scipp for python guide](https://scipp.github.io/index.html)

[Python data science handbook](https://jakevdp.github.io/PythonDataScienceHandbook/)Python data science book, data management, visualizations and machine learning

[--- dunno yet --- Abstract classes?](https://github.com/cjohnson318/til/blob/main/python/abstract-base-class.md)

**Mathematics**

[SITMO website](https://www.sitmo.com/)Thijs van den berg's website

[Optimization libraries](https://scicoding.com/convex-optimization-in-python-3-libraries/)A small guide on convex optimization with python.

[Applied Mathematics Numerical Analysis](https://github.com/DavideScassola/P1.4_seed)Walkthrough of a course on numerical analysis

[covariance shrinkage repository](https://github.com/jasonstrimpel/covshrink)                              Repository for python code used to shrink covariance

[H. Paul Keeler's repository](https://github.com/hpaulkeeler)

**AI and machine learning**

[Basic AI guide for Python](https://www.tutorialspoint.com/artificial_intelligence_with_python/artificial_intelligence_with_python_quick_guide.htm)                                          I would recommend starting here, if you're new to AI

[Intro to Reinforcement learning](https://towardsdatascience.com/hands-on-introduction-to-reinforcement-learning-in-python-da07f7aaca88)                          Introduction, good reading, but I didn't find this as the most helpful for the coding

[Guide to Q-learning](https://rubikscode.net/2021/07/13/deep-q-learning-with-python-and-tensorflow-2-0/)I used this one myself for a couple of experiments

[GfG guide to Q-learning](https://www.geeksforgeeks.org/ml-reinforcement-learning-algorithm-python-implementation-using-q-learning/?ref=rp)Geeksforgeeks guide to Q-learning in python

[Q-learn colab](https://colab.research.google.com/drive/1E2RViy7xmor0mhqskZV14_NUj2jMpJz3)Q-learning google colab document

[Dreamer AI](https://github.com/danijar/dreamerv2)Can reliably play the old atari games

[OpenAI models for the API                                        I](https://platform.openai.com/docs/models/continuous-model-upgrades)f you have access to the API, you can choose between these models

[AI for stock price prediction](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)                                 commentary coming soon

[Very advanced AI for cryptocurrency prediction](https://github.com/khuangaf/CryptocurrencyPrediction)commentary coming soon

[Stock trading AI](https://github.com/gustavovargas/stocktradingrl)                            [commentary co](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)m[ing soon](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[AlphaPy](https://github.com/ScottFreeLLC/AlphaPy) [commentary coming soon](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[David scassola's repository                                         AI stuff](https://github.com/DavideScassola?tab=repositories)

[Scikit-learn](https://scikit-learn.org/stable/)                                                                   Scikit-learns guides to machine learning algorithms

**Quantitative finance**

[The openBBterminal for investment research](https://github.com/OpenBB-finance/OpenBBTerminal)

**All-around stuff**

[Basic finance library and repostiory](https://github.com/GriffinAustin/pynance)

[Basic finance library in chinese(?)](https://github.com/alpha-miner/Finance-Python)

[Python for finance book online](https://github.com/yhilpisch/py4fi)The code used for the book Python for finance.

[Python for finance repository](https://github.com/teobeeguan/Python-For-Finance)A different "python for finance", collection of code pieces.

[Financial models numerical methods.](https://github.com/cantaro86/Financial-Models-Numerical-Methods/tree/master)Repository with code pieces on financial models

[Financial signal processing with python](https://github.com/yuvalofek/Financial-Signal-Processing)[Various signal processing codes, SDEs, markowitz, binomial asset pricing](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[Economic data terminal](https://github.com/webn3ewbie/Economic-Data-Terminal/tree/main)                                          The repository for a macroeconomic dataterminal develop by Webn3ewbie

[Various useful QF codebits](https://github.com/jpcolino/IPython_notebooks)JPcolino's jupyter notebooks for quantitative finance

[Quantlib](https://quantlib-python-docs.readthedocs.io/en/latest/basics.html)                                                                         User guide and documentation of QuantLib

[Quantlib tutorials](http://gouthamanbalaraman.com/blog/quantlib-python-tutorials-with-examples.html)Goutham Balaraman's guides for using QuantLib in python.

[tools for integration](https://github.com/bpsmith/tia)                                                Various python tools for integration with Bloomberg or other APIs

[f.fn package](https://github.com/pmorissette/ffn/tree/master)Various python functions for finance related tasks

[QSTK repository](https://github.com/QuantSoftware/QuantSoftwareToolkit/tree/master)Repository for a quant oriented python package called quantsoftwaretoolkit.

[GS quant package](https://github.com/goldmansachs/gs-quant)Goldman Sachs repository for their quant package

[Monte carlo methods for Fin. Eng.](https://github.com/federicomariamassari/financial-engineering)

[Tensorflow quant finance](https://github.com/google/tf-quant-finance)

[Broad repository for Quant. Finance](https://github.com/domokane/FinancePy)

[QuantPy library and repository](https://github.com/jsmidt/QuantPy)

[Cython Quantlib](https://github.com/enthought/pyql)

**Algorithmic trading**

[Algorithmic trading](https://github.com/gbeced)                                                 [Gabriel Becedillas' repositories for algorithmic trading](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[Quant trading](https://github.com/je-suis-tm/quant-trading)[Je-suis-tm's quant trading repository](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[RLcrypto](https://github.com/yuriak/RLCrypto)                                                                         Underlying code for the trading platform https://www.huobi.com/en-us/

[Stocks particle filters](https://github.com/DavideScassola/Stocks-particle-filters/tree/main/code)Support vector machine code for particle filters on stock patterns

[Trality blog - algorithmic trading](https://www.trality.com/blog/algorithmic-trading)                             Trality blog post about algorithmic trading with python

[Trality blog](https://www.trality.com/blog/build-python-trading-bot) trading bots                                             Trality blog post about trading bots  and how to connect to trading platforms with python.

[ARCH/GARCH volatility forecasting](https://mdbrezina.com/)SROSE's walkthrough of ARCH/GARCH for volatility forecasting

**Portfolio management**

[Portfolio optimization](https://builtin.com/data-science/portfolio-optimization-python)                                                 Simple article and portfolio optimization walkthrough

[Visualize wealth portfolio tool](https://github.com/benjaminmgross/visualize-wealth)                                 Benjamin Gross' repository for his portfolio management tool.

[Kelly portfolio](https://github.com/thk3421-models/KellyPortfolio/tree/main)[commentary coming soon](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[Cardiel portfolio](https://github.com/thk3421-models/cardiel)                                                         commentary coming soon

[Riskfolio-lib](https://riskfolio-lib.readthedocs.io/en/latest/install.html)Quant portfolio optimization library for python

**Fixed income, Credit risk And Interest Rates**

[DJ Bolder's Credit risk modelling](https://github.com/djbolder/credit-risk-modelling)                          David Jamieson bolder's Credit risk modelling repository

[Bond value calculation models](https://github.com/shreysrins/bond-calculator/tree/main) Shreysrins bond calculator with python

[Bond valuation models](https://github.com/SunilVeeravalli/Bond-valuations/tree/master)                                            SunilVeeravallis bond valuation with python

[Time value of money](https://github.com/genedan/TmVal/tree/master)                                              A repository for the python package TmVal, on the time value of money

**Derivatives pricing**

[Heston model calibration](https://colab.research.google.com/drive/1M1YJncdswd-A9SgIOAjw6g6Se7NHU9mG?usp=sharing)  [Google colab on heston model calibration](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[Walkthrough of the heston model](https://quantpy.com.au/stochastic-volatility-models/heston-model-calibration-to-option-prices/) [Entire walkthrough of heston model calibration, with maths and python](https://github.com/ksergiou/Time-Series-Forecasting/blob/c26e2cf71fee4ad3ddf48665f662094b50804a98/Time_Series_Forecasting.ipynb)

[Options pricing with fOptions](https://github.com/bbcho/finoptions-dev)

[Options pricing with Quantsbin](https://github.com/quantsbin/Quantsbin)

[Options pricing with Q-fin](https://github.com/RomanMichaelPaolucci/Q-Fin)

[Options pricing with optlib](https://github.com/dbrojas/optlib)

[Breeden-Litzenberger option pricing                     Commentary coming later](https://quantpy.com.au/stochastic-calculus/breeden-litzenberger-formula-for-risk-neutral-densities/)

[Merton Jump diffusion models                                Commentary coming later](https://www.codearmo.com/python-tutorial/merton-jump-diffusion-model-python)

[Merton Jump diffusion models 2                             Commentary coming later](https://github.com/federicomariamassari/financial-engineering/tree/master)

[Willow tree for Options pricing](https://github.com/federicomariamassari/willowtree)

[SABR with python](https://github.com/ynouri/pysabr)

[Vollib repository and package](https://github.com/vollib/vollib)

**Backtesting & model validation**

[jpm backtesting library](http://pmorissette.github.io/bt/)                                              JPMorgans backtesting repository

[jpm SFinX library](https://github.com/jpmorganchase/SFinX/tree/main)JPMorgans Standardized FINancial eXtractions repository

[Pinkfish](https://github.com/fja05680/pinkfish)                                                                           A backtester and spreadsheet library for financial securities analysis

[Qstrader](https://github.com/mhallsmoore/qstrader)                                                                           A quant finance backtesting simulation repository

[QSForex](https://github.com/mhallsmoore/qsforex)                                                                          A quant finance backtesting for forex repository

**Insurance**

[CAS repositories and profile                                       Commentary coming later](https://github.com/casact)

[Gene dan's profile](https://github.com/genedan)[Commentary coming later](https://github.com/casact)

[John Bogaardt repositories](https://github.com/jbogaardt?tab=repositories)[Commentary coming later](https://github.com/casact)

[Open source Actuarial models](https://github.com/open-source-modelling)[Commentary coming later](https://github.com/casact)

[Lifelib opensource actuarial models](https://github.com/lifelib-dev)[Commentary coming later](https://github.com/casact)

**Dashboard development**

[Some Dashboard development with plotly](https://github.com/Coding-with-Adam/Dash-by-Plotly/tree/master)[Commentary coming later](https://github.com/casact)

[Data science blog](https://xavierbourretsicotte.github.io/)[Commentary coming later](https://github.com/casact)

[Panel package walkthroughs](https://panel.holoviz.org/reference/templates/Bootstrap.html)[Commentary coming later](https://github.com/casact)

**App development**

[PyQT widgets](https://www.pythontutorial.net/pyqt/pyqt-qtablewidget/)[Commentary coming later](https://github.com/casact)

[PyQT database connection](https://www.tutorialspoint.com/pyqt5/pyqt5_database_handling.htm)[Commentary coming later](https://github.com/casact)

[PyQT with media player](https://coderslegacy.com/python/pyqt5-video-player-with-qmediaplayer/)[Commentary coming later](https://github.com/casact)

[PyQT for editing the in app table](https://stackoverflow.com/questions/46895943/pyqt5-how-can-i-change-tables-content)[Commentary coming later](https://github.com/casact)

R

**Basics**

[R books](https://bookdown.org/)

[R for data science book](https://r4ds.had.co.nz/introduction.html)

[Introductory books galore](https://cran.r-project.org/other-docs.html)

[Tychobra Shiny dashboards](https://github.com/Tychobra)

**Advanced basics**

[R Graphs galore](https://r-charts.com/base-r/grid/)

[Color palettes for graphs](https://coolors.co/palettes/popular)

[MIT instructions on how to make an R-package](https://web.mit.edu/insong/www/pdf/rpackage_instructions.pdf)

[CRAN packages mirrors](https://github.com/cran)

[NDEXR](https://github.com/frankkramer-lab/ndexr) - setting up an API with R

[GPU processing with R](https://repository.usfca.edu/cgi/viewcontent.cgi?article=1058&context=at)

[GPU processing, deep learning with R?](https://arxiv.org/pdf/1901.09647.pdf)

**Mathematics**

[Statistical models by M. Clark](https://m-clark.github.io/models-by-example/linear-regression.html)

[Numerical methods and optimisation for finance with R](https://github.com/NMOF/NMOF/tree/master)

**Insurance**

[Datasets for insurnace](https://github.com/kasaai/insurance)

[Prediction analysis datasets](https://github.com/sdcastillo/ExamPAData)

**Basic**

[shiny dashboards for insurance](https://github.com/Tychobra/shiny-insurance-examples)

[Giorgio spedicato](https://github.com/spedygiorgio)

[Ernesto Schirmacher](https://github.com/eschirmacher)

[Gian Clemente](https://github.com/GianPaoloClemente)

[Ivan williams](https://github.com/IvanWilli?tab=repositories)

[Christophe dutang](https://github.com/dutangc)

[Rob J hyndman](https://github.com/robjhyndman?tab=repositories)

[katrien antonio's repository](https://github.com/katrienantonio)

[How to use R presentation](https://www.slideshare.net/Zurich_R_User_Group/rinfinancegabrielfoix)

[basic R for insurance](https://www.slideshare.net/dataspora/an-interactive-introduction-to-r-programming-language-for-statistics)

[markus Gesmann](https://www.magesblog.com/)

[Markus Gesmanns Github](https://github.com/mages)

[R in insurance 2013](https://github.com/mages/R_in_Insurance_2013)

[Bond pricing for actuaries](https://github.com/javaidiqbal11/Different-R-tasks-in-actuary-direction)

**Pricing**

[cheatsheet on r for insurance](https://www.actuaries.org.uk/system/files/documents/pdf/Gesmann.pdf)Markus Gesmann's presentation on R usage for insurance

[Insurance pricing with R](https://katrienantonio.github.io/PE-pricing-analytics/sheets/pricing_analytics_lecture_sheets_in_pdf.pdf)                                    PDF presentation on insurance pricings with R

[Insurance contracts with R](https://insurancedatascience.org/downloads/London2013/Giorgio/spedicato_RInInsurance_presentation.pdf)                               Mostly reinsurance and traded contracts, considerations and presentation on R usage for pricing

[Regression modeling](https://instruction.bus.wisc.edu/jfrees/jfreesbooks/Regression%20Modeling/BookWebDec2010/statSoftware.html)From the cambridge books

**Claims reserving**

[claims reserving](https://github.com/djhindley/shiny-server)                                                    David Hindley's shiny server for claims reserving

**life insurance**

[LI - demographics code](https://github.com/robjhyndman/demography)

[Shiny for life insurance premiums](https://github.com/Gianatmaja/Life-Insurance-Premium-Calculator)

[Deterministic life insurance](https://github.com/JoaquinAuza/DetLifeInsurance)

[Life contingencies](https://github.com/spedygiorgio/lifecontingencies)

**non-life insurance**

NLI - I[nsurance rating](https://mharinga.github.io/insurancerating/)

[Claims amounts and severity](https://github.com/anhdanggit/insurance-econometrics)

**Libraries**

[r-libraries in the insurance industry](https://www.r-bloggers.com/2011/09/r-in-the-insurance-industry/)

[InsuranceData package for R](https://cran.r-project.org/web/packages/insuranceData/insuranceData.pdf)

[Life insurance Contracts for R](https://cran.rstudio.com/web/packages/LifeInsuranceContracts/LifeInsuranceContracts.pdf)

[MortalityTables for R](https://cran.rstudio.com/web/packages/MortalityTables/MortalityTables.pdf)

[SOA mortality tables R package](https://github.com/issactoast/SOAmort)

[Actuarial tools R package](https://github.com/mayer79/actools)

**AI for insurance**

[XGboost in insurance](https://github.com/LeoPetrini/XGBoost-in-Insurance-2017)

[kasa-ai group](https://github.com/kasaai)

[AI in actuarial science](https://github.com/RonRichman/AI_in_Actuarial_Science)

[ML for insurance loan applications](https://github.com/agrawal-priyank/Machine-Learning-Models-For-Insurance-Loan-Applicants)

**Random repositories**

[R for actuaries (spanish though)](https://github.com/A1arcon/R_Actuarial)

[R actuary package](https://github.com/seokhoonj/actuary/tree/master) by Seokhoon Joo

[Various actuary work in R and Python](https://github.com/chadih/Actuary-Project)

[Tidyquant functions in R](https://cran.r-project.org/web/packages/tidyquant/vignettes/TQ01-core-functions-in-tidyquant.html)

[Quanttools introduction](https://quanttools.bitbucket.io/_site/get_started.html)

**Options pricing**

[European option pricing with R](https://github.com/vettorefburana/European-Option-Pricing/blob/main/option_pricing.R)

[Heston model](https://github.com/daleroberts/heston/blob/master/heston.r)

[binomial model for option pricing with R](https://github.com/Cuadernin/ModBinomialR/blob/master/ModeloBinomial.R)

[non random walks down wall street](https://github.com/StuartGordonReid/NonRandomWalks/tree/65b713cd91bce5a81c3660b366c7f992f15b1cdb)

AI/Machine learning

[MLOSS](https://mloss.org/software/)                                                                              AI and Machine learning software website \*\*\*

[Attention](https://arxiv.org/pdf/1706.03762.pdf)                                                                         The original google paper on attention as a key feature of AIs, the corner stone for GPTs \*\*\*

[ChatGPT research paper](https://arxiv.org/pdf/2005.14165.pdf)                                            The OpenAI paper about the construction of their ChatGPT engines \*\*\*

[Google research Brain team](https://research.google/teams/brain/)

[Ebursztein's repositories](https://github.com/ebursztein)                                             Repositories owned by google lead on cybersecurity

[Google researcher repositories](https://github.com/charles92) -                               Repositories from a former google researcher on AI vision

[Google research](https://github.com/google-research)                                                            Google research repositories \*\*\*

[GitHub user with a lot of AI development](https://github.com/AminHP?tab=repositories)

[AI/ML modeling repositories](https://github.com/AIMLModeling?tab=repositories)User with a lot of useful repositories for AI

[A lot of AI models on one page](https://github.com/leondgarse/keras_cv_attention_models) A combined repository with a lot of different AI models \*\*\*

[Karpathy's guide](https://karpathy.ai/zero-to-hero.html)                                                      Kaparthy, essentially THE GUY for AI, guide to learning to develop AIs

[Kaparthy's GPT colab](https://colab.research.google.com/drive/1JMLa53HDuA-i7ZBmqV7ZnA3c_fvtXnx-?usp=sharing)                                                   Kaparthy's GPT development sheet on Colab

[Transformers](https://github.com/cure-lab/LTSF-Linear)                                                                  LTSF-linear, transformer models for timeseries

[AutoGPT](https://github.com/Significant-Gravitas/Auto-GPT/tree/master)

[Cat VS dog CNN classifier](https://github.com/girishkuniyal/Cat-Dog-CNN-Classifier)AI to figure out if object in picture is a cat or a dog

[Next word prediction](https://github.com/Bharath-K3/Next-Word-Prediction-with-NLP-and-Deep-Learning)AI to predict the next word with NLP

[RNN network development](https://quantdare.com/implementing-a-rnn-with-numpy/)Development of a RNN network with numpy

[Scikit-learn user guide](https://scikit-learn.org/stable/user_guide.html)A user guide for the various regression tools from Scikit-learn (SKLearn package)

[machine learning repository](https://github.com/je-suis-tm/machine-learning)Various nice to have python notebooks on some important algorithms.

[Emotion and speech recognition](https://github.com/rjrahul24/ai-with-python-series/tree/main)Repository with AI code on such topics as Emotion and speech recognition

[Score SDE pytorch](https://github.com/DavideScassola/score_sde_pytorch)Picture generation like MidJourney or DALL-E

[Chatbot with tensorflow](https://github.com/simranjeet97/ChatBot_Tensorflow_NLP/blob/master/Contextual%20Chatbot%20-%20NLP%20and%20Tensorflow.ipynb)A chatbot developed with the library TensorFlow

[Scikit learn handwritting](https://scikit-learn.org/stable/auto_examples/classification/plot_digits_classification.html)                                           Scikit learn walkthrough to develop AI to recognize handwriting

[Tabular deeplearning](https://github.com/Yura52/rtdl)                                                 Research on development of a tabular deeplearning algorithm

Insurance

https://www.actuaries.org.uk/system/files/documents/pdf/GN47V1-1.pdf

https://web.math.ku.dk/noter/filer/phd15kb.pdf

https://www.actuaries.asn.au/Library/Vol12\_Issue4(web).pdf

https://genedan.com/readings/

Physics

[Galaxy simulator](https://galaxym.ovh/)

[Bozack(yes, not what you think it is)](http://fys.bozack.dk/kurser/formelsamlinger/)                       For danish students at UCPH physics these legendary exam prep cheatsheats

**Neutron star collision articles recommended by albert sneppen**

https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.125.141103

https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.061102

https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.122.061101

https://iopscience.iop.org/article/10.1086/374662/fulltext/57293.text.html

https://iopscience.iop.org/article/10.1086/344410/fulltext/56455.text.html

https://iopscience.iop.org/article/10.3847/1538-4357/ac19ab/meta

Quantitative Finance

**C++**

[w3schools on c++](https://www.w3schools.com/cpp/)

[very useful repositories by Matthias Groncki](https://github.com/mgroncki?tab=repositories)

[Luigi Balllabio Quantlib creator](https://github.com/lballabio?tab=repositories)

[C++ webscraping](https://www.webscrapingapi.com/c-web-scraping)

[black scholes with C++](https://datasimfinancial.com/UserFiles/downloads/chapter16formules.pdf)

[C++ courses for quantitative finance             Daniel Duffy's company](https://www.datasim.nl/)

[C++ algorithm for matrix optimization for markowitz portfolio theory](https://robertosantanderprofessionalprofile.blogspot.com/2022/02/algorithm.html)

[xva for bemudan swaptions with C++](https://quantlib.wordpress.com/2015/06/27/xva-for-bermudan-swaptions/#respond)

[youtube video and presentation of c++ high speed trading](https://www.youtube.com/watch?v=8uAW5FQtcvE)

**Associations**

[IAQF](https://iaqf.org/)                                                                                     International association for quantitative finance

[SIAM](https://www.siam.org/)                                                                                   Society for industrial and applied mathematics

[CFA institute](https://www.cfainstitute.org/)CFA means chartered financial analyst

[FMI](https://fminstitute.com/)Financial modelling institute

[CISI](https://www.cisi.org/cisiweb2/cisi-website/homepages/cisi-financial-services-professional-body)                                                                                       Chartered institute for securities and investment

[ARPM](https://www.arpm.co/)                                                                               Advanced risk and portfolio management institute

[SOA](https://www.soa.org/)Society of actuaries, the US actuary society

[IFoA](https://actuaries.org.uk/)Institute and faculty of Actuaries, the UK actuary society

[IRM](https://www.theirm.org/)                                                                                        Institute of risk management

[PRMIA](https://www.prmia.org/)Professional risk managers' international association

[GARP](https://www.garp.org/)                                                                                 Global association of risk professionals

Not entirely sure about these

[LAT](https://www.lat.london/)                                                                                      London academy for trading

[NACM](https://nacm.org/)                                                                                   National association of credit management

[RMA](https://www.rmahq.org/)                                                                                     Risk management association

[Calibration and simulation with the heston model a thorough guide](https://www.degruyter.com/document/doi/10.1515/math-2017-0058/html?lang=en)

[Full and fast calibration of the Heston stochastic volatility model very nice article](http://www0.cs.ucl.ac.uk/staff/g.germano/papers/EurJOperRes_2017.pdf)

[Closed-Form Solutions to Differential Equations via Differential Evolution](https://www.hindawi.com/journals/ddns/2015/910316/)

[Finite difference method](https://en.wikipedia.org/wiki/Finite_difference_method)

[Quant maths model on macroeconomics](https://en.wikipedia.org/wiki/Solow%E2%80%93Swan_model)

[ARCH, GARCH](https://en.wikipedia.org/wiki/Autoregressive_conditional_heteroskedasticity)

[Heath jarrow morton framework](https://en.wikipedia.org/wiki/Heath%E2%80%93Jarrow%E2%80%93Morton_framework)

Books

The following books I've either used or would recommend for use with quant finance  
I'd recommend handpicking, as the sum total cost is probably beyond 10K £

SQL programming

[Learning SQL book](https://www.amazon.com/Learning-SQL-Alan-Beaulieu/dp/0596520832/ref=sr_1_1?s=books&ie=UTF8&qid=1362349834&sr=1-1&keywords=learning+sql)

[T-SQL fundamentals for microsoft SQL server 2012](https://www.amazon.com/Microsoft-Server-2012-T-SQL-Fundamentals/dp/0735658145/ref=sr_1_1?ie=UTF8&qid=1382901063&sr=8-1&keywords=tsql+fundamentals)

[Modern database management](https://www.amazon.com/Modern-Database-Management-Jeffrey-Hoffer/dp/0136088392/ref=sr_1_1?ie=UTF8&qid=1514688643&sr=8-1&keywords=modern+database+management+10th)

Excel and VBA

[Excel 2010 with VBA](https://www.amazon.com/Excel-Power-Programming-Spreadsheets-Bookshelf/dp/0470475358/ref=sr_1_1?s=books&ie=UTF8&qid=1311547145&sr=1-1)

**AI books**

[Deep learning book - an MIT press book](https://www.deeplearningbook.org/)

[Artificial intelligence: A modern approach](https://www.amazon.com/Artificial-Intelligence-Modern-Approach-3rd/dp/0136042597/ref=sr_1_2?ie=UTF8&qid=1515871550&sr=8-2&keywords=artificial+intelligence+a+modern)

**Python coding**

[Automate the boring stuff - online book on python](https://automatetheboringstuff.com/)

Visual quickstart guide

[blog on python for quant finance](https://ipythonquant.wordpress.com/)

[Learning to program](https://www.freenetpages.co.uk/hp/alan.gauld/)

[Create GUI applications with python](https://www.amazon.com/Create-Applications-Python-PyQt5-hands/dp/B08RB2HRS1/ref=sr_1_1?crid=2T4JVUY8NA2RI&keywords=create+gui+applications&qid=1648304014&sprefix=create+gui+applicatio%2Caps%2C206&sr=8-1)

**R coding**

R projects by "for dummies"

Statistical analysis with R by "for dummies"

Regression with R by Niels Richard Hansen/UCPH

Time series analysis by Cryer and Chan

[Portfolio management with R](https://www.tidy-pm.com/s-1intro)

[R for Geographical Information Systems](https://www.cellulestat.cra.wallonie.be/wp-content/uploads/2016/12/fvw_rgis_article_light.pdf)

[A beginner's guide to R](https://www.amazon.com/Beginners-Guide-Use-Alain-Zuur/dp/0387938362/ref=sr_1_1?ie=UTF8&qid=1318903165&sr=8-1)

[R graphics cookbook](https://www.amazon.com/Graphics-Cookbook-Practical-Recipes-Visualizing/dp/1491978600/ref=sr_1_1?ajr=2&keywords=r+graphics+cookbook&qid=1697586492&sprefix=r+graph%2Caps&sr=8-1)

[Data manipulation with R](https://www.amazon.com/Data-Manipulation-R-Use/dp/0387747303/ref=sr_1_1?ie=UTF8&qid=1382901211&sr=8-1&keywords=data+manipulation+with+r)

[Dynamic documents with r and knitr](https://www.amazon.com/Dynamic-Documents-knitr-Chapman-Series/dp/1482203537/ref=sr_1_1?ie=UTF8&qid=1386344557&sr=8-1&keywords=dynamic+documents)

[reproducible research with R and Rstduio](https://www.amazon.com/Reproducible-Research-RStudio-Chapman-Series/dp/1466572841/ref=sr_1_1?ie=UTF8&qid=1390719529&sr=8-1&keywords=reproducible+research)

[R for data science](https://www.amazon.com/Data-Science-Transform-Visualize-Model/dp/1491910399/ref=sr_1_3?ie=UTF8&qid=1543702690&sr=8-3&keywords=r+for+data+science)

[R packages](https://www.amazon.com/Packages-Organize-Test-Document-Share/dp/1491910593/ref=sr_1_1?crid=2MS5EOUALDR60&keywords=r+packages&qid=1684938206&sprefix=r+%2Caps%2C1443&sr=8-1)

**C++ coding**

Financial Instrument Pricing using C++ by duffy.

Introduction to C++ for financial engineers by duffy.

Monte Carlo Frameworks by duffy.

**Recommended to me:**

[C++ tutorial](https://cplusplus.com/doc/tutorial/)

**credit risk**

Credit-risk modelling by bolder. Python code inside

Credit risk modelling, valuation and hedging by bielecki & rutkowski

concentration risk in credit portfolios by lütkebohmert

**recommended to me :**

[Quantitative global bond portfolio management](https://www.worldscientific.com/worldscibooks/10.1142/13313#t=aboutBook)

[Mathematical interest theory](https://www.amazon.com/Mathematical-Interest-Association-America-Textbooks/dp/0883857545/ref=sr_1_1?ie=UTF8&s=books&qid=1284737227&sr=8-1)

**general risk**

Foundations of financial risk by Apostolik and Donohue for GARP

Risk and portfolio analysis by Hult, Lindskog, Hmmarlid and Rehn

Risk analysis in finance and insurance by Melnikov

Mathematical risk analysis by Rüschendorf ( and Mikosch?)

**insurance**

non-life insurance mathematics by Mikosch

Introduction to insurance mathematics by Olivieri and pitacco

Solvency II in the insurance industry by Heep-altiner, Mullins and Rohlfs

Financial modelling, actuarial valuation and solvency in insurance by Wüthrich and merz

Risk theory by Schmidli

Fundamentals of Actuarial mathematics by Promislow

Risk and insurance by Asmussen and Steffensen

Predictive modelling applications in actuarial science by Free, Derrig and Meyers

Financial enterprise risk management by Sweeting

Risk modelling in general insurance by Gray and Pitts

Insurance risk and ruin by Dickson

Introduction to mathematical portfolio theory by Joshi and paterson

Actuarial mathematics for life contingent risk by dickson, hardy and waters

regression modeling with actuarial and financial applications by frees

modelling mortality with actuarial applications by macdonald, richards and currie

claims reserving in general insurance by hindley

[Actuarial mathematics](https://www.amazon.com/Actuarial-Mathematics-Newton-L-Bowers/dp/0938959468/ref=sr_1_1?ie=UTF8&qid=1292987273&sr=8-1)

**mathematics useful for finance**

advanced linear modeling by christensen

stochastic differential equations by Øksendal

introduction to stochastic calculus with applications by Klebaner

Stochastic calculus for finance I: Binomial asset pricing model by Shreve

stochastic calculus for finance II: continuous time models by shreve

monte carlo methods in financial engineering by Glasserman

Arbitrage theory in continuous time by Björk

Mean field games by I honestly don't know who, it seems like an entire village list of names

Convex and stochastic optimization by Bonnans

[An Introduction to Statistical Learning](https://hastie.su.domains/ISLR2/ISLRv2_website.pdf) (WITH R) by James, Witten, Hastie and Tibshirani

[Euler Maruyama](https://www.math.kit.edu/ianm3/lehre/nummathfin2012w/media/euler_maruyama.pdf)

[Square root diffusion processes](http://www.jaeckel.org/eqf013_009.pdf)

**Recommended to me:**

[Bayesian forecasting and dynamic models](https://link.springer.com/book/10.1007/b98971) recommended to me by Peter Cotton

[Microprediction by peter cotton](https://mitpress.mit.edu/9780262047326/microprediction/)

[statistical analysis of financial data with R](https://www.amazon.com/gp/product/1461487870/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=1461487870&linkId=f4c068a3e4bdc1c260344838531790a7)

[Theory of information and its value](https://www.amazon.com/Theory-Information-Value-Roman-Belavkin/dp/3030228320/ref=sr_1_1?keywords=theory+of+information+and+its+value&qid=1697552343&s=books&sr=1-1)

**Online resources**

[Catalog of articles in probability theory](https://en.wikipedia.org/wiki/Catalog_of_articles_in_probability_theory)

[List of probability distributions](https://en.wikipedia.org/wiki/List_of_probability_distributions)

[list of stochastics processes](https://en.wikipedia.org/wiki/List_of_stochastic_processes_topics)

[integral projection models](https://cws.auburn.edu/shared/files?id=217&filename=ConMan_FileDownload_IntegralProjection.pdf)

[Auckland university - stochastic processes course notes](https://www.stat.auckland.ac.nz/~fewster/325/notes/325book.pdf)

[Probability course](https://www.probabilitycourse.com/) - a probability course, online link

[random services](https://www.randomservices.org/random/index.html) - a probability course, online link

[University of copenhagen old exams walkthroughs](http://web.math.ku.dk/noter/filer/exam/)

[Encyclopedia of math](https://encyclopediaofmath.org/wiki/Main_Page)

[Proof wiki](https://proofwiki.org/wiki/Main_Page)

[MathOverflow](https://mathoverflow.net/)

[Math Stack Exchange](https://math.stackexchange.com/)

MIM2 solutions manual - http://motapa.de/measures\_integrals\_and\_martingales/solutions-mims-2e.pdf

[H. Paul Keeler - stochastic processes](https://hpaulkeeler.com/)

[Peter Jäckel's website](http://www.jaeckel.org/)

[Colombia university statistic](https://statmodeling.stat.columbia.edu/)

[Robert Nau's website on Duke university](https://people.duke.edu/~rnau/411home.htm)

[Djalil Chafaï's website](https://djalil.chafai.net/wiki/)

[Almost sure - stochastic processes blog](https://almostsuremath.com/)

[Extreme learning - various math blog posts](https://extremelearning.com.au/)

[Mad Data scientist's blog](https://matloff.wordpress.com/)

[Mad Data scientist's course on statistics](https://github.com/matloff/fastStat)

[Eventually Almost everywhere - probability theory blog](https://eventuallyalmosteverywhere.wordpress.com/)

[Count Bayesie - probability theory blog](https://www.countbayesie.com/)

[Math3ma - A mathematics podcast](https://www.math3ma.com/)

[LaTeX documentation](https://www.latex-project.org/help/documentation/)

[PostGreSQL documentation](https://www.postgresql.org/files/documentation/pdf/11/postgresql-11-A4.pdf?fbclid=IwAR0QL_WciKBfjbg8yPxCcClVFxKDJdOiOKgP0CRBa5TS31LQJgA7RlPNNIQ)

**Investing/finance**

The intelligent investor Benjamin Graham

**Recommended to me:**

[Securities analysis Benjamin Graham](https://www.amazon.com/gp/product/0071592539/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=0071592539&linkId=363ae97d373e862593335b510ee896ce)

[Financial modelling](https://www.amazon.com/gp/product/0262027283/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=0262027283&linkId=d194aebb782bc79cc02678c25d43c1fd) by Simon benninga

[VaR modelling Handbook by Gregoriou](https://www.amazon.com/gp/product/B003JH86G6/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=B003JH86G6&linkId=58ea250a1ae60bb14620d49676bbcd00)

[The elements of statistical learning](https://www.amazon.com/gp/product/0387848576/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=0387848576&linkId=6ceb9391c2eaf6fdfe34751ce96de084)

[Mastering Python](https://www.amazon.com/gp/product/B07JDC79VK/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=B07JDC79VK&linkId=5dba8e887c20b9a77a4587a9af11eb4a)

[The art of R programming](https://www.amazon.com/gp/product/1593273843/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=1593273843&linkId=c4e7ddfbf595125ab2d5a1ca887fbb3b)

Options, futures and Other derivatives

[Arbitrage theory in continuous time](https://www.amazon.com/gp/product/019957474X/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=019957474X&linkId=5a4ed1c894680abfd3a1d79bf63c0f06)

**Quantitative finance**

quantitative portfolio management by brugière. Python code inside

Introduction to stochastic finance by Yan

Fundamentals and advanced techniques in derivatives hedging by Bouchard and Chassagneux

Computational methods for quantitative finance by Hilber, Reichmann, Schwab and Winter

[A primer for the mathematics of financial engineering](https://www.amazon.com/gp/product/0979757622/ref=as_li_qf_asin_il_tl?ie=UTF8&tag=fancyquant-20&creative=9325&linkCode=as2&creativeASIN=0979757622&linkId=a65a705d6a323bd8f18f8ea6eaade150)

[Modern portfolio theory by Elton, Gruber, Brown and Goetzmann](https://dl.rasabourse.com/Books/Finance%20and%20Financial%20Markets/%5BEdwin_J._Elton%2C_Martin_J._Gruber%2C_Stephen_J._Brow_Modern%20Portfolio%20Theory%20and%20Investment%28rasabourse.com%29.pdf)

[Neftci's Financial derivatives book       - recommended by Jonas Hal](https://mdbrezina.com/onewebmedia/Neftci%20-%20An%20Introduction%20to%20the%20Math%20of%20Financial%20Derivatives%202e.pdf)

[Derivatives markets](https://www.amazon.com/Derivatives-Markets-2nd-Robert-McDonald/dp/032128030X/ref=sr_1_1?s=books&ie=UTF8&qid=1284736879&sr=1-1)

[Interest Rate Modeling. Volume 1        - recommended by Jens Lund](https://www.amazon.co.uk/Interest-Rate-Modeling-Foundations-Vanilla/dp/0984422102)

[Modern Computational Finance: Scripting for Derivatives and xVA - recommended by Jens Lund](https://www.amazon.co.uk/Modern-Computational-Finance-Scripting-Derivatives/dp/111954078X/ref=sr_1_1?crid=2E3T6YDHO9S8X&keywords=modern+computational+finance+antoine+savine&qid=1698314129&s=books&sprefix=modern+computational+finance+antoine+savine%2Cstripbooks%2C54&sr=1-1)

### Numerical Libraries & Data Structures

* [numpy](https://www.numpy.org/) - NumPy is the fundamental package for scientific computing with Python.
* [scipy](https://www.scipy.org/) - SciPy (pronounced “Sigh Pie”) is a Python-based ecosystem of open-source software for mathematics, science, and engineering.
* [pandas](https://pandas.pydata.org/) - pandas is an open source, BSD-licensed library providing high-performance, easy-to-use data structures and data analysis tools for the Python programming language.
* [quantdsl](https://github.com/johnbywater/quantdsl) - Domain specific language for quantitative analytics in finance and trading.
* [statistics](https://docs.python.org/3/library/statistics.html) - Builtin Python library for all basic statistical calculations.
* [sympy](https://www.sympy.org/) - SymPy is a Python library for symbolic mathematics.
* [pymc3](https://docs.pymc.io/) - Probabilistic Programming in Python: Bayesian Modeling and Probabilistic Machine Learning with Theano.
* [modelx](https://docs.modelx.io/) - Python reimagination of spreadsheets as formula-centric objects that are interoperable with pandas.
* [ArcticDB](https://github.com/man-group/ArcticDB) - High performance datastore for time series and tick data.

### Financial Instruments and Pricing

* [OpenBB Terminal](https://github.com/OpenBB-finance/OpenBBTerminal) - Terminal for investment research for everyone.
* [PyQL](https://github.com/enthought/pyql) - QuantLib's Python port.
* [pyfin](https://github.com/opendoor-labs/pyfin) - Basic options pricing in Python. ARCHIVED
* [vollib](https://github.com/vollib/vollib) - vollib is a python library for calculating option prices, implied volatility and greeks.
* [QuantPy](https://github.com/jsmidt/QuantPy) - A framework for quantitative finance In python.
* [Finance-Python](https://github.com/alpha-miner/Finance-Python) - Python tools for Finance.
* [ffn](https://github.com/pmorissette/ffn) - A financial function library for Python.
* [pynance](https://github.com/GriffinAustin/pynance) - Lightweight Python library for assembling and analysing financial data.
* [tia](https://github.com/bpsmith/tia) - Toolkit for integration and analysis.
* [hasura/base-python-dash](https://platform.hasura.io/hub/projects/hasura/base-python-dash) - Hasura quickstart to deploy Dash framework. Written on top of Flask, Plotly.js, and React.js, Dash is ideal for building data visualization apps with highly custom user interfaces in pure Python.
* [hasura/base-python-bokeh](https://platform.hasura.io/hub/projects/hasura/base-python-bokeh) - Hasura quickstart to visualize data with bokeh library.
* [pysabr](https://github.com/ynouri/pysabr) - SABR model Python implementation.
* [FinancePy](https://github.com/domokane/FinancePy) - A Python Finance Library that focuses on the pricing and risk-management of Financial Derivatives, including fixed-income, equity, FX and credit derivatives.
* [gs-quant](https://github.com/goldmansachs/gs-quant) - Python toolkit for quantitative finance
* [willowtree](https://github.com/federicomariamassari/willowtree) - Robust and flexible Python implementation of the willow tree lattice for derivatives pricing.
* [financial-engineering](https://github.com/federicomariamassari/financial-engineering) - Applications of Monte Carlo methods to financial engineering projects, in Python.
* [optlib](https://github.com/dbrojas/optlib) - A library for financial options pricing written in Python.
* [tf-quant-finance](https://github.com/google/tf-quant-finance) - High-performance TensorFlow library for quantitative finance.
* [Q-Fin](https://github.com/RomanMichaelPaolucci/Q-Fin) - A Python library for mathematical finance.
* [Quantsbin](https://github.com/quantsbin/Quantsbin) - Tools for pricing and plotting of vanilla option prices, greeks and various other analysis around them.
* [finoptions](https://github.com/bbcho/finoptions-dev) - Complete python implementation of R package fOptions with partial implementation of fExoticOptions for pricing various options.
* [pypme](https://github.com/ymyke/pypme) - PME (Public Market Equivalent) calculation.
* [AbsBox](https://github.com/yellowbean/AbsBox) - A Python based library to model cashflow for structured product like Asset-backed securities (ABS) and Mortgage-backed securities (MBS).
* [Intrinsic-Value-Calculator](https://github.com/akashaero/Intrinsic-Value-Calculator) - A Python tool for quick calculations of a stock's fair value using Discounted Cash Flow analysis.
* [Kelly-Criterion](https://github.com/deltaray-io/kelly-criterion) - Kelly Criterion implemented in Python to size portfolios based on J. L. Kelly Jr's formula.

### Indicators

* [pandas\_talib](https://github.com/femtotrader/pandas_talib) - A Python Pandas implementation of technical analysis indicators.
* [finta](https://github.com/peerchemist/finta) - Common financial technical analysis indicators implemented in Pandas.
* [Tulipy](https://github.com/cirla/tulipy) - Financial Technical Analysis Indicator Library (Python bindings for [tulipindicators](https://github.com/TulipCharts/tulipindicators))
* [lppls](https://github.com/Boulder-Investment-Technologies/lppls) - A Python module for fitting the [Log-Periodic Power Law Singularity (LPPLS)](https://en.wikipedia.org/wiki/Didier_Sornette#The_JLS_and_LPPLS_models) model.

### Trading & Backtesting

* [skfolio](https://github.com/skfolio/skfolio) - Python library for portfolio optimization built on top of scikit-learn. It provides a unified interface and sklearn compatible tools to build, tune and cross-validate portfolio models.
* [Investing algorithm framework](https://github.com/coding-kitties/investing-algorithm-framework) - Framework for developing, backtesting, and deploying automated trading algorithms.
* [QSTrader](https://github.com/mhallsmoore/qstrader) - QSTrader backtesting simulation engine.
* [Blankly](https://github.com/Blankly-Finance/Blankly) - Fully integrated backtesting, paper trading, and live deployment.
* [TA-Lib](https://github.com/mrjbq7/ta-lib) - Python wrapper for TA-Lib (<http://ta-lib.org/>).
* [zipline](https://github.com/quantopian/zipline) - Pythonic algorithmic trading library.
* [QuantSoftware Toolkit](https://github.com/QuantSoftware/QuantSoftwareToolkit) - Python-based open source software framework designed to support portfolio construction and management.
* [quantitative](https://github.com/jeffrey-liang/quantitative) - Quantitative finance, and backtesting library.
* [analyzer](https://github.com/llazzaro/analyzer) - Python framework for real-time financial and backtesting trading strategies.
* [bt](https://github.com/pmorissette/bt) - Flexible Backtesting for Python.
* [backtrader](https://github.com/backtrader/backtrader) - Python Backtesting library for trading strategies.
* [pythalesians](https://github.com/thalesians/pythalesians) - Python library to backtest trading strategies, plot charts, seamlessly download market data, analyse market patterns etc.
* [pybacktest](https://github.com/ematvey/pybacktest) - Vectorized backtesting framework in Python / pandas, designed to make your backtesting easier.
* [pyalgotrade](https://github.com/gbeced/pyalgotrade) - Python Algorithmic Trading Library.
* [basana](https://github.com/gbeced/basana) - A Python async and event driven framework for algorithmic trading, with a focus on crypto currencies.
* [tradingWithPython](https://pypi.org/project/tradingWithPython/) - A collection of functions and classes for Quantitative trading.
* [Pandas TA](https://github.com/twopirllc/pandas-ta) - Pandas TA is an easy to use Python 3 Pandas Extension with 115+ Indicators. Easily build Custom Strategies.
* [ta](https://github.com/bukosabino/ta) - Technical Analysis Library using Pandas (Python)
* [algobroker](https://github.com/joequant/algobroker) - This is an execution engine for algo trading.
* [pysentosa](https://pypi.org/project/pysentosa/) - Python API for sentosa trading system.
* [finmarketpy](https://github.com/cuemacro/finmarketpy) - Python library for backtesting trading strategies and analyzing financial markets.
* [binary-martingale](https://github.com/metaperl/binary-martingale) - Computer program to automatically trade binary options martingale style.
* [fooltrader](https://github.com/foolcage/fooltrader) - the project using big-data technology to provide an uniform way to analyze the whole market.
* [zvt](https://github.com/zvtvz/zvt) - the project using sql,pandas to provide an uniform and extendable way to record data,computing factors,select securites, backtesting,realtime trading and it could show all of them in clearly charts in realtime.
* [pylivetrader](https://github.com/alpacahq/pylivetrader) - zipline-compatible live trading library.
* [pipeline-live](https://github.com/alpacahq/pipeline-live) - zipline's pipeline capability with IEX for live trading.
* [zipline-extensions](https://github.com/quantrocket-llc/zipline-extensions) - Zipline extensions and adapters for QuantRocket.
* [moonshot](https://github.com/quantrocket-llc/moonshot) - Vectorized backtester and trading engine for QuantRocket based on Pandas.
* [PyPortfolioOpt](https://github.com/robertmartin8/PyPortfolioOpt) - Financial portfolio optimisation in python, including classical efficient frontier and advanced methods.
* [Eiten](https://github.com/tradytics/eiten) - Eiten is an open source toolkit by Tradytics that implements various statistical and algorithmic investing strategies such as Eigen Portfolios, Minimum Variance Portfolios, Maximum Sharpe Ratio Portfolios, and Genetic Algorithms based Portfolios.
* [riskparity.py](https://github.com/dppalomar/riskparity.py) - fast and scalable design of risk parity portfolios with TensorFlow 2.0
* [mlfinlab](https://github.com/hudson-and-thames/mlfinlab) - Implementations regarding "Advances in Financial Machine Learning" by Marcos Lopez de Prado. (Feature Engineering, Financial Data Structures, Meta-Labeling)
* [pyqstrat](https://github.com/abbass2/pyqstrat) - A fast, extensible, transparent python library for backtesting quantitative strategies.
* [NowTrade](https://github.com/edouardpoitras/NowTrade) - Python library for backtesting technical/mechanical strategies in the stock and currency markets.
* [pinkfish](https://github.com/fja05680/pinkfish) - A backtester and spreadsheet library for security analysis.
* [aat](https://github.com/timkpaine/aat) - Async Algorithmic Trading Engine
* [Backtesting.py](https://kernc.github.io/backtesting.py/) - Backtest trading strategies in Python
* [catalyst](https://github.com/enigmampc/catalyst) - An Algorithmic Trading Library for Crypto-Assets in Python
* [quantstats](https://github.com/ranaroussi/quantstats) - Portfolio analytics for quants, written in Python
* [qtpylib](https://github.com/ranaroussi/qtpylib) - QTPyLib, Pythonic Algorithmic Trading [http://qtpylib.io](http://qtpylib.io/)
* [Quantdom](https://github.com/constverum/Quantdom) - Python-based framework for backtesting trading strategies & analyzing financial markets [GUI ]
* [freqtrade](https://github.com/freqtrade/freqtrade) - Free, open source crypto trading bot
* [algorithmic-trading-with-python](https://github.com/chrisconlan/algorithmic-trading-with-python) - Free pandas and scikit-learn resources for trading simulation, backtesting, and machine learning on financial data.
* [DeepDow](https://github.com/jankrepl/deepdow) - Portfolio optimization with deep learning
* [Qlib](https://github.com/microsoft/qlib) - An AI-oriented Quantitative Investment Platform by Microsoft. Full ML pipeline of data processing, model training, back-testing; and covers the entire chain of quantitative investment: alpha seeking, risk modeling, portfolio optimization, and order execution.
* [machine-learning-for-trading](https://github.com/stefan-jansen/machine-learning-for-trading) - Code and resources for Machine Learning for Algorithmic Trading
* [AlphaPy](https://github.com/ScottfreeLLC/AlphaPy) - Automated Machine Learning [AutoML] with Python, scikit-learn, Keras, XGBoost, LightGBM, and CatBoost
* [jesse](https://github.com/jesse-ai/jesse) - An advanced crypto trading bot written in Python
* [rqalpha](https://github.com/ricequant/rqalpha) - A extendable, replaceable Python algorithmic backtest && trading framework supporting multiple securities.
* [FinRL-Library](https://github.com/AI4Finance-LLC/FinRL-Library) - A Deep Reinforcement Learning Library for Automated Trading in Quantitative Finance. NeurIPS 2020.
* [bulbea](https://github.com/achillesrasquinha/bulbea) - Deep Learning based Python Library for Stock Market Prediction and Modelling.
* [ib\_nope](https://github.com/ajhpark/ib_nope) - Automated trading system for NOPE strategy over IBKR TWS.
* [OctoBot](https://github.com/Drakkar-Software/OctoBot) - Open source cryptocurrency trading bot for high frequency, arbitrage, TA and social trading with an advanced web interface.
* [bta-lib](https://github.com/mementum/bta-lib) - Technical Analysis library in pandas for backtesting algotrading and quantitative analysis.
* [Stock-Prediction-Models](https://github.com/huseinzol05/Stock-Prediction-Models) - Gathers machine learning and deep learning models for Stock forecasting including trading bots and simulations.
* [TuneTA](https://github.com/jmrichardson/tuneta) - TuneTA optimizes technical indicators using a distance correlation measure to a user defined target feature such as next day return.
* [AutoTrader](https://github.com/kieran-mackle/AutoTrader) - A Python-based development platform for automated trading systems - from backtesting to optimisation to livetrading.
* [fast-trade](https://github.com/jrmeier/fast-trade) - A library built with backtest portability and performance in mind for backtest trading strategies.
* [qf-lib](https://github.com/quarkfin/qf-lib) - QF-Lib is a Python library that provides high quality tools for quantitative finance.
* [tda-api](https://github.com/alexgolec/tda-api) - Gather data and trade equities, options, and ETFs via TDAmeritrade.
* [vectorbt](https://github.com/polakowo/vectorbt) - Find your trading edge, using a powerful toolkit for backtesting, algorithmic trading, and research.
* [Lean](https://github.com/QuantConnect/Lean) - Lean Algorithmic Trading Engine by QuantConnect (Python, C#).
* [fast-trade](https://github.com/jrmeier/fast-trade) - Low code backtesting library utilizing pandas and technical analysis indicators.
* [pysystemtrade](https://github.com/robcarver17/pysystemtrade) - pysystemtrade is the open source version of Robert Carver's backtesting and trading engine that implements systems according to the framework outlined in his book "Systematic Trading", which is further developed on his [blog](https://qoppac.blogspot.com/).
* [pytrendseries](https://github.com/rafa-rod/pytrendseries) - Detect trend in time series, drawdown, drawdown within a constant look-back window , maximum drawdown, time underwater.
* [PyLOB](https://github.com/DrAshBooth/PyLOB) - Fully functioning fast Limit Order Book written in Python.
* [PyBroker](https://github.com/edtechre/pybroker) - Algorithmic Trading with Machine Learning.
* [OctoBot Script](https://github.com/Drakkar-Software/OctoBot-Script) - A quant framework to create cryptocurrencies strategies - from backtesting to optimisation to livetrading.
* [hftbacktest](https://github.com/nkaz001/hftbacktest) - A high-frequency trading and market-making backtesting tool accounts for limit orders, queue positions, and latencies, utilizing full tick data for trades and order books.
* [vnpy](https://github.com/vnpy/vnpy) - VeighNa is a Python-based open source quantitative trading system development framework.
* [Intelligent Trading Bot](https://github.com/asavinov/intelligent-trading-bot) - Automatically generating signals and trading based on machine learning and feature engineering

### Risk Analysis

* [pyfolio](https://github.com/quantopian/pyfolio) - Portfolio and risk analytics in Python.
* [empyrical](https://github.com/quantopian/empyrical) - Common financial risk and performance metrics.
* [fecon235](https://github.com/rsvp/fecon235) - Computational tools for financial economics include: Gaussian Mixture model of leptokurtotic risk, adaptive Boltzmann portfolios.
* [finance](https://pypi.org/project/finance/) - Financial Risk Calculations. Optimized for ease of use through class construction and operator overload.
* [qfrm](https://pypi.org/project/qfrm/) - Quantitative Financial Risk Management: awesome OOP tools for measuring, managing and visualizing risk of financial instruments and portfolios.
* [visualize-wealth](https://github.com/benjaminmgross/visualize-wealth) - Portfolio construction and quantitative analysis.
* [VisualPortfolio](https://github.com/wegamekinglc/VisualPortfolio) - This tool is used to visualize the performance of a portfolio.
* [universal-portfolios](https://github.com/Marigold/universal-portfolios) - Collection of algorithms for online portfolio selection.
* [FinQuant](https://github.com/fmilthaler/FinQuant) - A program for financial portfolio management, analysis and optimisation.
* [Empyrial](https://github.com/ssantoshp/Empyrial) - Portfolio's risk and performance analytics and returns predictions.
* [risktools](https://github.com/bbcho/risktools-dev) - Risk tools for use within the crude and crude products trading space with partial implementation of R's PerformanceAnalytics.
* [Riskfolio-Lib](https://github.com/dcajasn/Riskfolio-Lib) - Portfolio Optimization and Quantitative Strategic Asset Allocation in Python.

### Factor Analysis

* [alphalens](https://github.com/quantopian/alphalens) - Performance analysis of predictive alpha factors.
* [Spectre](https://github.com/Heerozh/spectre) - GPU-accelerated Factors analysis library and Backtester

### Quant Research Environment

* [Jupyter Quant](https://github.com/gnzsnz/jupyter-quant) - A dockerized Jupyter quant research environment with preloaded tools for quant analysis, statsmodels, pymc, arch, py\_vollib, zipline-reloaded, PyPortfolioOpt, etc.

### Time Series

* [ARCH](https://github.com/bashtage/arch) - ARCH models in Python.
* [statsmodels](http://statsmodels.sourceforge.net/) - Python module that allows users to explore data, estimate statistical models, and perform statistical tests.
* [dynts](https://github.com/quantmind/dynts) - Python package for timeseries analysis and manipulation.
* [PyFlux](https://github.com/RJT1990/pyflux) - Python library for timeseries modelling and inference (frequentist and Bayesian) on models.
* [tsfresh](https://github.com/blue-yonder/tsfresh) - Automatic extraction of relevant features from time series.
* [hasura/quandl-metabase](https://platform.hasura.io/hub/projects/anirudhm/quandl-metabase-time-series) - Hasura quickstart to visualize Quandl's timeseries datasets with Metabase.
* [Facebook Prophet](https://github.com/facebook/prophet) - Tool for producing high quality forecasts for time series data that has multiple seasonality with linear or non-linear growth.
* [tsmoothie](https://github.com/cerlymarco/tsmoothie) - A python library for time-series smoothing and outlier detection in a vectorized way.
* [pmdarima](https://github.com/alkaline-ml/pmdarima) - A statistical library designed to fill the void in Python's time series analysis capabilities, including the equivalent of R's auto.arima function.
* [gluon-ts](https://github.com/awslabs/gluon-ts) - vProbabilistic time series modeling in Python.

### Calendars

* [exchange\_calendars](https://github.com/gerrymanoim/exchange_calendars) - Stock Exchange Trading Calendars.
* [bizdays](https://github.com/wilsonfreitas/python-bizdays) - Business days calculations and utilities.
* [pandas\_market\_calendars](https://github.com/rsheftel/pandas_market_calendars) - Exchange calendars to use with pandas for trading applications.

### Data Sources

* [yfinance](https://github.com/ranaroussi/yfinance) - Yahoo! Finance market data downloader (+faster Pandas Datareader)
* [findatapy](https://github.com/cuemacro/findatapy) - Python library to download market data via Bloomberg, Quandl, Yahoo etc.
* [googlefinance](https://github.com/hongtaocai/googlefinance) - Python module to get real-time stock data from Google Finance API.
* [yahoo-finance](https://github.com/lukaszbanasiak/yahoo-finance) - Python module to get stock data from Yahoo! Finance.
* [pandas-datareader](https://github.com/pydata/pandas-datareader) - Python module to get data from various sources (Google Finance, Yahoo Finance, FRED, OECD, Fama/French, World Bank, Eurostat...) into Pandas datastructures such as DataFrame, Panel with a caching mechanism.
* [pandas-finance](https://github.com/davidastephens/pandas-finance) - High level API for access to and analysis of financial data.
* [pyhoofinance](https://github.com/innes213/pyhoofinance) - Rapidly queries Yahoo Finance for multiple tickers and returns typed data for analysis.
* [yfinanceapi](https://github.com/Karthik005/yfinanceapi) - Finance API for Python.
* [yql-finance](https://github.com/slawek87/yql-finance) - yql-finance is simple and fast. API returns stock closing prices for current period of time and current stock ticker (i.e. APPL, GOOGL).
* [ystockquote](https://github.com/cgoldberg/ystockquote) - Retrieve stock quote data from Yahoo Finance.
* [wallstreet](https://github.com/mcdallas/wallstreet) - Real time stock and option data.
* [stock\_extractor](https://github.com/ZachLiuGIS/stock_extractor) - General Purpose Stock Extractors from Online Resources.
* [Stockex](https://github.com/cttn/Stockex) - Python wrapper for Yahoo! Finance API.
* [finsymbols](https://github.com/skillachie/finsymbols) - Obtains stock symbols and relating information for SP500, AMEX, NYSE, and NASDAQ.
* [FRB](https://github.com/avelkoski/FRB) - Python Client for FRED® API.
* [inquisitor](https://github.com/econdb/inquisitor) - Python Interface to Econdb.com API.
* [yfi](https://github.com/nickelkr/yfi) - Yahoo! YQL library.
* [chinesestockapi](https://pypi.org/project/chinesestockapi/) - Python API to get Chinese stock price.
* [exchange](https://github.com/akarat/exchange) - Get current exchange rate.
* [ticks](https://github.com/jamescnowell/ticks) - Simple command line tool to get stock ticker data.
* [pybbg](https://github.com/bpsmith/pybbg) - Python interface to Bloomberg COM APIs.
* [ccy](https://github.com/lsbardel/ccy) - Python module for currencies.
* [tushare](https://pypi.org/project/tushare/) - A utility for crawling historical and Real-time Quotes data of China stocks.
* [jsm](https://pypi.org/project/jsm/) - Get the japanese stock market data.
* [cn\_stock\_src](https://github.com/jealous/cn_stock_src) - Utility for retrieving basic China stock data from different sources.
* [coinmarketcap](https://github.com/barnumbirr/coinmarketcap) - Python API for coinmarketcap.
* [after-hours](https://github.com/datawrestler/after-hours) - Obtain pre market and after hours stock prices for a given symbol.
* [bronto-python](https://pypi.org/project/bronto-python/) - Bronto API Integration for Python.
* [pytdx](https://github.com/rainx/pytdx) - Python Interface for retrieving chinese stock realtime quote data from TongDaXin Nodes.
* [pdblp](https://github.com/matthewgilbert/pdblp) - A simple interface to integrate pandas and the Bloomberg Open API.
* [tiingo](https://github.com/hydrosquall/tiingo-python) - Python interface for daily composite prices/OHLC/Volume + Real-time News Feeds, powered by the Tiingo Data Platform.
* [iexfinance](https://github.com/addisonlynch/iexfinance) - Python Interface for retrieving real-time and historical prices and equities data from The Investor's Exchange.
* [pyEX](https://github.com/timkpaine/pyEX) - Python interface to IEX with emphasis on pandas, support for streaming data, premium data, points data (economic, rates, commodities), and technical indicators.
* [alpaca-trade-api](https://github.com/alpacahq/alpaca-trade-api-python) - Python interface for retrieving real-time and historical prices from Alpaca API as well as trade execution.
* [metatrader5](https://pypi.org/project/MetaTrader5/) - API Connector to MetaTrader 5 Terminal
* [akshare](https://github.com/jindaxiang/akshare) - AkShare is an elegant and simple financial data interface library for Python, built for human beings! [https://akshare.readthedocs.io](https://akshare.readthedocs.io/)
* [yahooquery](https://github.com/dpguthrie/yahooquery) - Python interface for retrieving data through unofficial Yahoo Finance API.
* [investpy](https://github.com/alvarobartt/investpy) - Financial Data Extraction from Investing.com with Python! <https://investpy.readthedocs.io/>
* [yliveticker](https://github.com/yahoofinancelive/yliveticker) - Live stream of market data from Yahoo Finance websocket.
* [bbgbridge](https://github.com/ran404/bbgbridge) - Easy to use Bloomberg Desktop API wrapper for Python.
* [alpha\_vantage](https://github.com/RomelTorres/alpha_vantage) - A python wrapper for Alpha Vantage API for financial data.
* [FinanceDataReader](https://github.com/FinanceData/FinanceDataReader) - Open Source Financial data reader for U.S, Korean, Japanese, Chinese, Vietnamese Stocks
* [pystlouisfed](https://github.com/TomasKoutek/pystlouisfed) - Python client for Federal Reserve Bank of St. Louis API - FRED, ALFRED, GeoFRED and FRASER.
* [python-bcb](https://github.com/wilsonfreitas/python-bcb) - Python interface to Brazilian Central Bank web services.
* [market-prices](https://github.com/maread99/market_prices) - Create meaningful OHLCV datasets from knowledge of [exchange-calendars](https://github.com/gerrymanoim/exchange_calendars) (works out-the-box with data from Yahoo Finance).
* [tardis-python](https://github.com/tardis-dev/tardis-python) - Python interface for Tardis.dev high frequency crypto market data
* [lake-api](https://github.com/crypto-lake/lake-api) - Python interface for Crypto Lake high frequency crypto market data
* [tessa](https://github.com/ymyke/tessa) - simple, hassle-free access to price information of financial assets (currently based on yfinance and pycoingecko), including search and a symbol class.
* [pandaSDMX](https://github.com/dr-leo/pandaSDMX) - Python package that implements SDMX 2.1 (ISO 17369:2013), a format for exchange of statistical data and metadata used by national statistical agencies, central banks, and international organisations.
* [cif](https://github.com/LenkaV/CIF) - Python package that include few composite indicators, which summarize multidimensional relationships between individual economic indicators.
* [finagg](https://github.com/theOGognf/finagg) - finagg is a Python package that provides implementations of popular and free financial APIs, tools for aggregating historical data from those APIs into SQL databases, and tools for transforming aggregated data into features useful for analysis and AI/ML.

### Excel Integration

* [xlwings](https://www.xlwings.org/) - Make Excel fly with Python.
* [openpyxl](https://openpyxl.readthedocs.io/en/latest/) - Read/Write Excel 2007 xlsx/xlsm files.
* [xlrd](https://github.com/python-excel/xlrd) - Library for developers to extract data from Microsoft Excel spreadsheet files.
* [xlsxwriter](https://xlsxwriter.readthedocs.io/) - Write files in the Excel 2007+ XLSX file format.
* [xlwt](https://github.com/python-excel/xlwt) - Library to create spreadsheet files compatible with MS Excel 97/2000/XP/2003 XLS files, on any platform.
* [DataNitro](https://datanitro.com/) - DataNitro also offers full-featured Python-Excel integration, including UDFs. Trial downloads are available, but users must purchase a license.
* [xlloop](http://xlloop.sourceforge.net/) - XLLoop is an open source framework for implementing Excel user-defined functions (UDFs) on a centralised server (a function server).
* [expy](http://www.bnikolic.co.uk/expy/expy.html) - The ExPy add-in allows easy use of Python directly from within an Microsoft Excel spreadsheet, both to execute arbitrary code and to define new Excel functions.
* [pyxll](https://www.pyxll.com/) - PyXLL is an Excel add-in that enables you to extend Excel using nothing but Python code.

### Visualization

* [D-Tale](https://github.com/man-group/dtale) - Visualizer for pandas dataframes and xarray datasets.
* [mplfinance](https://github.com/matplotlib/mplfinance) - matplotlib utilities for the visualization, and visual analysis, of financial data.
* [finplot](https://github.com/highfestiva/finplot) - Performant and effortless finance plotting for Python.
* [finvizfinance](https://github.com/lit26/finvizfinance) - Finviz analysis python library.
* [market-analy](https://github.com/maread99/market_analy) - Analysis and interactive charting using [market-prices](https://github.com/maread99/market_prices) and bqplot.

## R

### Numerical Libraries & Data Structures

* [xts](https://github.com/joshuaulrich/xts) - eXtensible Time Series: Provide for uniform handling of R's different time-based data classes by extending zoo, maximizing native format information preservation and allowing for user level customization and extension, while simplifying cross-class interoperability.
* [data.table](https://github.com/Rdatatable/data.table) - Extension of data.frame: Fast aggregation of large data (e.g. 100GB in RAM), fast ordered joins, fast add/modify/delete of columns by group using no copies at all, list columns and a fast file reader (fread). Offers a natural and flexible syntax, for faster development.
* [sparseEigen](https://github.com/dppalomar/sparseEigen) - Sparse pricipal component analysis.
* [TSdbi](http://tsdbi.r-forge.r-project.org/) - Provides a common interface to time series databases.
* [tseries](https://cran.r-project.org/web/packages/tseries/index.html) - Time Series Analysis and Computational Finance.
* [zoo](https://cran.r-project.org/web/packages/zoo/index.html) - S3 Infrastructure for Regular and Irregular Time Series (Z's Ordered Observations).
* [tis](https://cran.r-project.org/web/packages/tis/index.html) - Functions and S3 classes for time indexes and time indexed series, which are compatible with FAME frequencies.
* [tfplot](https://cran.r-project.org/web/packages/tfplot/index.html) - Utilities for simple manipulation and quick plotting of time series data.
* [tframe](https://cran.r-project.org/web/packages/tframe/index.html) - A kernel of functions for programming time series methods in a way that is relatively independently of the representation of time.

### Data Sources

* [IBrokers](https://cran.r-project.org/web/packages/IBrokers/index.html) - Provides native R access to Interactive Brokers Trader Workstation API.
* [Rblpapi](https://github.com/Rblp/Rblpapi) - An R Interface to 'Bloomberg' is provided via the 'Blp API'.
* [Quandl](https://www.quandl.com/tools/r) - Get Financial Data Directly Into R.
* [Rbitcoin](https://github.com/jangorecki/Rbitcoin) - Unified markets API interface (bitstamp, kraken, btce, bitmarket).
* [GetTDData](https://github.com/msperlin/GetTDData) - Downloads and aggregates data for Brazilian government issued bonds directly from the website of Tesouro Direto.
* [GetHFData](https://github.com/msperlin/GetHFData) - Downloads and aggregates high frequency trading data for Brazilian instruments directly from Bovespa ftp site.
* [Reddit WallstreetBets API](https://dashboard.nbshare.io/apps/reddit/api/) - Provides daily top 50 stocks from reddit (subreddit) Wallstreetbets and their sentiments via the API.
* [td](https://github.com/eddelbuettel/td) - Interfaces the 'twelvedata' API for stocks and (digital and standard) currencies.
* [rbcb](https://github.com/wilsonfreitas/rbcb) - R interface to Brazilian Central Bank web services.
* [rb3](https://github.com/ropensci/rb3) - A bunch of downloaders and parsers for data delivered from B3.
* [simfinapi](https://github.com/matthiasgomolka/simfinapi) - Makes 'SimFin' data (<https://simfin.com/>) easily accessible in R.

### Financial Instruments and Pricing

* [RQuantLib](http://dirk.eddelbuettel.com/code/rquantlib.html) - RQuantLib connects GNU R with QuantLib.
* [quantmod](https://cran.r-project.org/web/packages/quantmod/index.html) - Quantitative Financial Modelling Framework.
* [Rmetrics](https://www.rmetrics.org/) - The premier open source software solution for teaching and training quantitative finance.
  + [fAsianOptions](https://cran.r-project.org/web/packages/fAsianOptions/index.html) - EBM and Asian Option Valuation.
  + [fAssets](https://cran.r-project.org/web/packages/fAssets/index.html) - Analysing and Modelling Financial Assets.
  + [fBasics](https://cran.r-project.org/web/packages/fBasics/index.html) - Markets and Basic Statistics.
  + [fBonds](https://cran.r-project.org/web/packages/fBonds/index.html) - Bonds and Interest Rate Models.
  + [fExoticOptions](https://cran.r-project.org/web/packages/fExoticOptions/index.html) - Exotic Option Valuation.
  + [fOptions](https://cran.r-project.org/web/packages/fOptions/index.html) - Pricing and Evaluating Basic Options.
  + [fPortfolio](https://cran.r-project.org/web/packages/fPortfolio/index.html) - Portfolio Selection and Optimization.
* [portfolio](https://github.com/dgerlanc/portfolio) - Analysing equity portfolios.
* [sparseIndexTracking](https://github.com/dppalomar/sparseIndexTracking) - Portfolio design to track an index.
* [covFactorModel](https://github.com/dppalomar/covFactorModel) - Covariance matrix estimation via factor models.
* [riskParityPortfolio](https://github.com/dppalomar/riskParityPortfolio) - Blazingly fast design of risk parity portfolios.
* [sde](https://cran.r-project.org/web/packages/sde/index.html) - Simulation and Inference for Stochastic Differential Equations.
* [YieldCurve](https://cran.r-project.org/web/packages/YieldCurve/index.html) - Modelling and estimation of the yield curve.
* [SmithWilsonYieldCurve](https://cran.r-project.org/web/packages/SmithWilsonYieldCurve/index.html) - Constructs a yield curve by the Smith-Wilson method from a table of LIBOR and SWAP rates.
* [ycinterextra](https://cran.r-project.org/web/packages/ycinterextra/index.html) - Yield curve or zero-coupon prices interpolation and extrapolation.
* [AmericanCallOpt](https://cran.r-project.org/web/packages/AmericanCallOpt/index.html) - This package includes pricing function for selected American call options with underlying assets that generate payouts.
* [VarSwapPrice](https://cran.r-project.org/web/packages/VarSwapPrice/index.html) - Pricing a variance swap on an equity index.
* [RND](https://cran.r-project.org/web/packages/RND/index.html) - Risk Neutral Density Extraction Package.
* [LSMonteCarlo](https://cran.r-project.org/web/packages/LSMonteCarlo/index.html) - American options pricing with Least Squares Monte Carlo method.
* [OptHedging](https://cran.r-project.org/web/packages/OptHedging/index.html) - Estimation of value and hedging strategy of call and put options.
* [tvm](https://cran.r-project.org/web/packages/tvm/index.html) - Time Value of Money Functions.
* [OptionPricing](https://cran.r-project.org/web/packages/OptionPricing/index.html) - Option Pricing with Efficient Simulation Algorithms.
* [credule](https://github.com/blenezet/credule) - Credit Default Swap Functions.
* [derivmkts](https://cran.r-project.org/web/packages/derivmkts/index.html) - Functions and R Code to Accompany Derivatives Markets.
* [FinCal](https://github.com/felixfan/FinCal) - Package for time value of money calculation, time series analysis and computational finance.
* [r-quant](https://github.com/artyyouth/r-quant) - R code for quantitative analysis in finance.
* [options.studies](https://github.com/taylorizing/options.studies) - options trading studies functions for use with options.data package and shiny.
* [PortfolioAnalytics](https://github.com/braverock/PortfolioAnalytics) - Portfolio Analysis, Including Numerical Methods for Optimizationof Portfolios.
* [fmbasics](https://github.com/imanuelcostigan/fmbasics) - Financial Market Building Blocks.
* [R-fixedincome](https://github.com/wilsonfreitas/R-fixedincome) - Fixed income tools for R.

### Trading

* [backtest](https://cran.r-project.org/web/packages/backtest/index.html) - Exploring Portfolio-Based Conjectures About Financial Instruments.
* [pa](https://cran.r-project.org/web/packages/pa/index.html) - Performance Attribution for Equity Portfolios.
* [TTR](https://github.com/joshuaulrich/TTR) - Technical Trading Rules.
* [QuantTools](https://quanttools.bitbucket.io/_site/index.html) - Enhanced Quantitative Trading Modelling.
* [blotter](https://github.com/braverock/blotter) - Transaction infrastructure for defining instruments, transactions, portfolios and accounts for trading systems and simulation. Provides portfolio support for multi-asset class and multi-currency portfolios. Actively maintained and developed.

### Backtesting

* [quantstrat](https://github.com/braverock/quantstrat) - Transaction-oriented infrastructure for constructing trading systems and simulation. Provides support for multi-asset class and multi-currency portfolios for backtesting and other financial research.

### Risk Analysis

* [PerformanceAnalytics](https://github.com/braverock/PerformanceAnalytics) - Econometric tools for performance and risk analysis.

### Factor Analysis

* [FactorAnalytics](https://github.com/braverock/FactorAnalytics) - The FactorAnalytics package contains fitting and analysis methods for the three main types of factor models used in conjunction with portfolio construction, optimization and risk management, namely fundamental factor models, time series factor models and statistical factor models.
* [Expected Returns](https://github.com/JustinMShea/ExpectedReturns) - Solutions for enhancing portfolio diversification and replications of seminal papers with R, most of which are discussed in one of the best investment references of the recent decade, Expected Returns: An Investors Guide to Harvesting Market Rewards by Antti Ilmanen.

### Time Series

* [tseries](https://cran.r-project.org/web/packages/tseries/index.html) - Time Series Analysis and Computational Finance.
* [fGarch](https://cran.r-project.org/web/packages/fGarch/index.html) - Rmetrics - Autoregressive Conditional Heteroskedastic Modelling.
* [timeSeries](https://cran.r-project.org/web/packages/timeSeries/index.html) - Rmetrics - Financial Time Series Objects.
* [rugarch](https://github.com/alexiosg/rugarch) - Univariate GARCH Models.
* [rmgarch](https://github.com/alexiosg/rmgarch) - Multivariate GARCH Models.
* [tidypredict](https://github.com/edgararuiz/tidypredict) - Run predictions inside the database <https://tidypredict.netlify.com/>.
* [tidyquant](https://github.com/business-science/tidyquant) - Bringing financial analysis to the tidyverse.
* [timetk](https://github.com/business-science/timetk) - A toolkit for working with time series in R.
* [tibbletime](https://github.com/business-science/tibbletime) - Built on top of the tidyverse, tibbletime is an extension that allows for the creation of time aware tibbles through the setting of a time index.
* [matrixprofile](https://github.com/matrix-profile-foundation/matrixprofile) - Time series data mining library built on top of the novel Matrix Profile data structure and algorithms.
* [garchmodels](https://github.com/AlbertoAlmuinha/garchmodels) - A parsnip backend for GARCH models.

### Calendars

* [timeDate](https://cran.r-project.org/web/packages/timeDate/index.html) - Chronological and Calendar Objects
* [bizdays](https://github.com/wilsonfreitas/R-bizdays) - Business days calculations and utilities
* [TradeFrame](https://github.com/rburkholder/trade-frame) - C++ 17 based framework/library (with sample applications) for testing options based automated trading ideas using DTN IQ real time data feed and Interactive Brokers (TWS API) for trade execution. Comes with built-in [Option Greeks/IV](https://github.com/rburkholder/trade-frame/tree/master/lib/TFOptions) calculation library.

## Frameworks

* [QuantLib](https://www.quantlib.org/) - The QuantLib project is aimed at providing a comprehensive software framework for quantitative finance.
  + [JQuantLib](http://www.jquantlib.org/) - Java port.
  + [RQuantLib](http://dirk.eddelbuettel.com/code/rquantlib.html) - R port.
  + [QuantLibAddin](https://www.quantlib.org/quantlibaddin/) - Excel support.
  + [QuantLibXL](https://www.quantlib.org/quantlibxl/) - Excel support.
  + [QLNet](https://github.com/amaggiulli/qlnet) - .Net port.
  + [PyQL](https://github.com/enthought/pyql) - Python port.
  + [QuantLib.jl](https://github.com/pazzo83/QuantLib.jl) - Julia port.
  + [QuantLib-Python Documentation](https://quantlib-python-docs.readthedocs.io/) - Documentation for the Python bindings for the QuantLib library
  + [QuantLib with Automatic Differention enabled](https://github.com/auto-differentiation/quantlib-xad) - Integration of Automatic Differentiation with the QuantLib library
* [TA-Lib](https://ta-lib.org/) - perform technical analysis of financial market data.
  + [ta-lib-python](https://github.com/TA-Lib/ta-lib-python)
  + [ta-lib](https://github.com/TA-Lib/ta-lib)
* [Portfolio Optimizer](https://portfoliooptimizer.io/) - Portfolio Optimizer is a Web API for portfolio analysis and optimization.

## CSharp

* [QuantConnect](https://github.com/QuantConnect/Lean) - Lean Engine is an open-source fully managed C# algorithmic trading engine built for desktop and cloud usage.
* [StockSharp](https://github.com/StockSharp/StockSharp) - Algorithmic trading and quantitative trading open source platform to develop trading robots (stock markets, forex, crypto, bitcoins, and options).
* [TDAmeritrade.DotNetCore](https://github.com/NVentimiglia/TDAmeritrade.DotNetCore) - Free, open-source .NET Client for the TD Ameritrade Trading Platform. Helps developers integrate TD Ameritrade API into custom trading solutions.
* [Derman Papers](https://github.com/MarcosCarreira/DermanPapers) - Notebooks that replicate original quantitative finance papers from Emanuel Derman.
* [ML-Quant](https://www.ml-quant.com/) - Top Quant resources like ArXiv (sanity), SSRN, RePec, Journals, Podcasts, Videos, and Blogs.
* [volatility-trading](https://github.com/jasonstrimpel/volatility-trading) - A complete set of volatility estimators based on Euan Sinclair's Volatility Trading.
* [quant](https://github.com/paulperry/quant) - Quantitative Finance and Algorithmic Trading exhaust; mostly ipython notebooks based on Quantopian, Zipline, or Pandas.
* [fecon235](https://github.com/rsvp/fecon235) - Open source project for software tools in financial economics. Many jupyter notebook to verify theoretical ideas and practical methods interactively.
* [Quantitative-Notebooks](https://github.com/LongOnly/Quantitative-Notebooks) - Educational notebooks on quantitative finance, algorithmic trading, financial modelling and investment strategy
* [QuantEcon](https://quantecon.org/) - Lecture series on economics, finance, econometrics and data science; QuantEcon.py, QuantEcon.jl, notebooks
* [FinanceHub](https://github.com/Finance-Hub/FinanceHub) - Resources for Quantitative Finance
* [Python\_Option\_Pricing](https://github.com/dedwards25/Python_Option_Pricing) - An libary to price financial options written in Python. Includes: Black Scholes, Black 76, Implied Volatility, American, European, Asian, Spread Options.
* [python-training](https://github.com/jpmorganchase/python-training) - J.P. Morgan's Python training for business analysts and traders.
* [Stock\_Analysis\_For\_Quant](https://github.com/LastAncientOne/Stock_Analysis_For_Quant) - Different Types of Stock Analysis in Excel, Matlab, Power BI, Python, R, and Tableau.
* [algorithmic-trading-with-python](https://github.com/chrisconlan/algorithmic-trading-with-python) - Source code for Algorithmic Trading with Python (2020) by Chris Conlan.
* [MEDIUM\_NoteBook](https://github.com/cerlymarco/MEDIUM_NoteBook) - Repository containing notebooks of [cerlymarco](https://github.com/cerlymarco)'s posts on Medium.
* [QuantFinance](https://github.com/PythonCharmers/QuantFinance) - Training materials in quantitative finance.
* [IPythonScripts](https://github.com/mgroncki/IPythonScripts) - Tutorials about Quantitative Finance in Python and QuantLib: Pricing, xVAs, Hedging, Portfolio Optimisation, Machine Learning and Deep Learning.
* [Computational-Finance-Course](https://github.com/LechGrzelak/Computational-Finance-Course) - Materials for the course of Computational Finance.
* [Machine-Learning-for-Asset-Managers](https://github.com/emoen/Machine-Learning-for-Asset-Managers) - Implementation of code snippets, exercises and application to live data from Machine Learning for Asset Managers (Elements in Quantitative Finance) written by Prof. Marcos López de Prado.
* [Python-for-Finance-Cookbook](https://github.com/PacktPublishing/Python-for-Finance-Cookbook) - Python for Finance Cookbook, published by Packt.
* [modelos\_vol\_derivativos](https://github.com/ysaporito/modelos_vol_derivativos) - "Modelos de Volatilidade para Derivativos" book's Jupyter notebooks
* [NMOF](https://github.com/enricoschumann/NMOF) - Functions, examples and data from the first and the second edition of "Numerical Methods and Optimization in Finance" by M. Gilli, D. Maringer and E. Schumann (2019, ISBN:978-0128150658).
* [py4fi2nd](https://github.com/yhilpisch/py4fi2nd) - Jupyter Notebooks and code for Python for Finance (2nd ed., O'Reilly) by Yves Hilpisch.
* [aiif](https://github.com/yhilpisch/aiif) - Jupyter Notebooks and code for the book Artificial Intelligence in Finance (O'Reilly) by Yves Hilpisch.
* [py4at](https://github.com/yhilpisch/py4at) - Jupyter Notebooks and code for the book Python for Algorithmic Trading (O'Reilly) by Yves Hilpisch.
* [dawp](https://github.com/yhilpisch/dawp) - Jupyter Notebooks and code for Derivatives Analytics with Python (Wiley Finance) by Yves Hilpisch.
* [dx](https://github.com/yhilpisch/dx) - DX Analytics | Financial and Derivatives Analytics with Python.
* [QuantFinanceBook](https://github.com/LechGrzelak/QuantFinanceBook) - Quantitative Finance book.
* [rough\_bergomi](https://github.com/ryanmccrickerd/rough_bergomi) - A Python implementation of the rough Bergomi model.
* [frh-fx](https://github.com/ryanmccrickerd/frh-fx) - A python implementation of the fast-reversion Heston model of Mechkov for FX purposes.
* [Value Investing Studies](https://github.com/euclidjda/value-investing-studies) - A collection of data analysis studies that examine the performance and characteristics of value investing over long periods of time.
* [Machine Learning Asset Management](https://github.com/firmai/machine-learning-asset-management) - Machine Learning in Asset Management (by @firmai).
* [Deep Learning Machine Learning Stock](https://github.com/LastAncientOne/Deep-Learning-Machine-Learning-Stock) - Deep Learning and Machine Learning stocks represent a promising long-term or short-term opportunity for investors and traders.
* [Technical Analysis and Feature Engineering](https://github.com/jo-cho/Technical_Analysis_and_Feature_Engineering) - Feature Engineering and Feature Importance of Machine Learning in Financial Market.
* [Differential Machine Learning and Axes that matter by Brian Huge and Antoine Savine](https://github.com/differential-machine-learning/notebooks) - Implement, demonstrate, reproduce and extend the results of the Risk articles 'Differential Machine Learning' (2020) and 'PCA with a Difference' (2021) by Huge and Savine, and cover implementation details left out from the papers.
* [systematictradingexamples](https://github.com/robcarver17/systematictradingexamples) - Examples of code related to book [Systematic Trading](https://github.com/wilsonfreitas/awesome-quant/blob/master/www.systematictrading.org) and [blog](http://qoppac.blogspot.com/)
* [pysystemtrade\_examples](https://github.com/robcarver17/pysystemtrade_examples) - Examples using pysystemtrade for Robert Carver's [blog](http://qoppac.blogspot.com/).
* [ML\_Finance\_Codes](https://github.com/mfrdixon/ML_Finance_Codes) - Machine Learning in Finance: From Theory to Practice Book
* [Hands-On Machine Learning for Algorithmic Trading](https://github.com/packtpublishing/hands-on-machine-learning-for-algorithmic-trading) - Hands-On Machine Learning for Algorithmic Trading, published by Packt
* [financialnoob-misc](https://github.com/financialnoob/misc) - Codes from @financialnoob's posts
* [MesoSim Options Trading Strategy Library](https://github.com/deltaray-io/strategy-library) - Free and public Options Trading strategy library for MesoSim.
* [Quant-Finance-With-Python-Code](https://github.com/lingyixu/Quant-Finance-With-Python-Code) - Repo for code examples in Quantitative Finance with Python by Chris Kelliher
* [QuantFinanceTraining](https://github.com/JoaoJungblut/QuantFinanceTraining) - This repository contains codes that were executed during my training in the CQF (Certificate in Quantitative Finance). The codes are organized by class, facilitating navigation and reference.