Outline of machine learning

The following outline is provided as an overview of and topical guide to machine learning:

Machine learning – subfield of computer science\(^{[1]}\) (more particularly soft computing) that evolved from the study of pattern recognition and computational learning theory in artificial intelligence\(^{[1]}\) In 1959, Arthur Samuel defined machine learning as a “Field of study that gives computers the ability to learn without being explicitly programmed.\(^{[2]}\) Machine learning explores the study and construction of algorithms that can learn from and make predictions on data.\(^{[3]}\) Such algorithms operate by building a model from an example training set of input observations in order to make data-driven predictions or decisions expressed as outputs, rather than following strictly static program instructions.

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What *type* of thing is machine learning?

- An academic discipline
- A branch of science
  - An applied science
    - A subfield of computer science
      - A branch of artificial intelligence
      - A subfield of soft computing

Branches of machine learning

Subfields of machine learning

Subfields of machine learning

- Computational learning theory—studying the design and analysis of machine learning algorithms.[4]
- Grammar induction
- Meta learning

Cross-disciplinary fields involving machine learning

Cross-disciplinary fields involving machine learning

- Adversarial machine learning
- Predictive analytics
- Quantum machine learning
- Robot learning
  - Developmental robotics

Applications of machine learning

Applications of machine learning

- Biomedical informatics
- Computer vision
- Customer relationship management
- Data mining
- Email filtering
- Inverted pendulum—balance and equilibrium system.
- Natural language processing (NLP)
  - Automatic summarization
  - Automatic taxonomy construction
  - Dialog system
  - Grammar checker
  - Language recognition
    - Handwriting recognition
    - Optical character recognition
    - Speech recognition
  - Machine translation
- Question answering
- Speech synthesis
- Text mining
  - Term frequency–inverse document frequency (tf–idf)
  - Text simplification
- Pattern recognition
  - Facial recognition system
  - Handwriting recognition
  - Image recognition
  - Optical character recognition
  - Speech recognition
- Recommendation system
  - Collaborative filtering
  - Content-based filtering
    - Hybrid recommender systems (Collaborative and content-based filtering)
- Search engine
  - Search engine optimization

### Machine learning hardware

Machine learning hardware

- Graphics processing unit
- Tensor processing unit
- Vision processing unit

### Machine learning tools

Machine learning tools (list)

- Comparison of deep learning software
  - Comparison of deep learning software/Resources

### Machine learning frameworks

Machine learning framework

#### Proprietary machine learning frameworks

Proprietary machine learning frameworks

- Amazon Machine Learning
- Microsoft Azure Machine Learning Studio
- DistBelief – replaced by TensorFlow
- Microsoft Cognitive Toolkit

#### Open source machine learning frameworks

Open source machine learning frameworks

- Apache Singa
- Caffe
- H2O
- PyTorch
- MLPACK
- TensorFlow
- Torch
- Accord.Net

**Machine learning libraries**

Machine learning library (list)

- Deeplearning4j
- Theano
- Scikit-learn

**Machine learning algorithms**

Machine learning algorithm

**Types of machine learning algorithms**

- Almeida–Pineda recurrent backpropagation
- ALOPEX
  - Backpropagation
  - Bootstrap aggregating
  - CN2 algorithm
- Constructing skill trees
- Dehaene–Changeux model
- Diffusion map
- Dominance-based rough set approach
- Dynamic time warping
- Error-driven learning
- Evolutionary multimodal optimization
- Expectation–maximization algorithm
- FastICA
- Forward–backward algorithm
- GeneRec
- Genetic Algorithm for Rule Set Production
- Growing self-organizing map
- HEXQ
- Hyper basis function network
- iDistance
- K-nearest neighbors algorithm
- Kernel methods for vector output
- Kernel principal component analysis
- Leabra
- Linde–Buzo–Gray algorithm
- Local outlier factor
- Logic learning machine
- LogitBoost
- Manifold alignment
- Minimum redundancy feature selection
- Mixture of experts
- Multiple kernel learning
- Non-negative matrix factorization
- Online machine learning
- Out-of-bag error
- Prefrontal cortex basal ganglia working memory
- PVLV
- Q-learning
- Quadratic unconstrained binary optimization
- Query-level feature
- Quickprop
- Radial basis function network
- Randomized weighted majority algorithm
- Reinforcement learning
- Repeated incremental pruning to produce error reduction (RIPPER)
- Rprop
- Rule-based machine learning
- Skill chaining
- Sparse PCA
- State–action–reward–state–action
- Stochastic gradient descent
- Structured kNN
- T-distributed stochastic neighbor embedding
- Temporal difference learning
- Wake-sleep algorithm
- Weighted majority algorithm (machine learning)

**Machine learning methods**

Machine learning method (list)

- **Instance-based algorithm**
  - K-nearest neighbors algorithm (KNN)
  - Learning vector quantization (LVQ)
  - Self-organizing map (SOM)

- **Regression analysis**
  - Logistic regression
  - Ordinary least squares regression (OLSR)
  - Linear regression
  - Stepwise regression
  - Multivariate adaptive regression splines (MARS)

- **Regularization algorithm**
  - Ridge regression
  - Least Absolute Shrinkage and Selection Operator (LASSO)
  - Elastic net
  - Least-angle regression (LARS)

- **Classifiers**
  - Probabilistic classifier
    - Naive Bayes classifier
  - Binary classifier
  - Linear classifier
  - Hierarchical classifier
Dimensionality reduction

- Canonical correlation analysis (CCA)
- Factor analysis
- Feature extraction
- Feature selection
- Independent component analysis (ICA)
- Linear discriminant analysis (LDA)
- Multidimensional scaling (MDS)
- Non-negative matrix factorization (NMF)
- Partial least squares regression (PLSR)
- Principal component analysis (PCA)
- Principal component regression (PCR)
- Projection pursuit
- Sammon mapping
- t-distributed stochastic neighbor embedding (t-SNE)

Ensemble learning

- AdaBoost
- Boosting
- Bootstrap aggregating (Bagging)
- Ensemble averaging—process of creating multiple models and combining them to produce a desired output, as opposed to creating just one model. Frequently an ensemble of models performs better than any individual model, because the various errors of the models “average out.”
- Gradient boosted decision tree (GBRT)
- Gradient boosting machine (GBM)
- Random Forest
- Stacked Generalization (blending)

Meta learning

- Inductive bias
- Metadata

Reinforcement learning

- Q-learning
- State–action–reward–state–action (SARSA)
- Temporal difference learning (TD)
- Learning Automata

Supervised learning

- AODE
- Artificial neural network
- Association rule learning algorithms
  - Apriori algorithm
  - Eclat algorithm
- Case-based reasoning
- Gaussian process regression
- Gene expression programming
- Group method of data handling (GMDH)
- Inductive logic programming
- Instance-based learning
- Lazy learning
- Learning Automata
- Learning Vector Quantization
- Logistic Model Tree
- Minimum message length (decision trees, decision graphs, etc.)
  - Nearest Neighbor Algorithm
  - Analogical modeling
- Probably approximately correct learning (PAC) learning
- Ripple down rules, a knowledge acquisition methodology
- Symbolic machine learning algorithms
- Support vector machines
- Random Forests
- Ensembles of classifiers
  - Bootstrap aggregating (bagging)
  - Boosting (meta-algorithm)
- Ordinal classification
- Information fuzzy networks (IFN)
- Conditional Random Field
- ANOVA
- Quadratic classifiers
  - k-nearest neighbor
- Boosting
  - SPRINT
- Bayesian networks
  - Naive Bayes
- Hidden Markov models
  - Hierarchical hidden Markov model

**Bayesian**

Bayesian statistics

- Bayesian knowledge base
- Naive Bayes
- Gaussian Naive Bayes
- Multinomial Naive Bayes
- Averaged One-Dependence Estimators (AODE)
- Bayesian Belief Network (BBN)
- Bayesian Network (BN)

**Decision tree algorithms**

Decision tree algorithm
- Decision tree
- Classification and regression tree (CART)
- Iterative Dichotomiser 3 (ID3)
- C4.5 algorithm
- C5.0 algorithm
- Chi-squared Automatic Interaction Detection (CHAID)
- Decision stump
- Conditional decision tree
- ID3 algorithm
- Random forest
- SLIQ

**Linear classifier**

*Linear classifier*

- Fisher's linear discriminant
- Linear regression
- Logistic regression
- Multinomial logistic regression
- Naive Bayes classifier
- Perceptron
- Support vector machine

**Unsupervised learning**

*Unsupervised learning*

- Expectation-maximization algorithm
- Vector Quantization
- Generative topographic map
- Information bottleneck method

**Artificial neural networks**

*Artificial neural network*

- Feedforward neural network
  - Extreme learning machine
  - Logic learning machine
  - Self-organizing map

**Association rule learning**

*Association rule learning*

- Apriori algorithm
- Eclat algorithm
- FP-growth algorithm

**Hierarchical clustering**

*Hierarchical clustering*

- Single-linkage clustering
- Conceptual clustering

**Cluster analysis**

Cluster analysis

- BIRCH
- DBSCAN
- Expectation-maximization (EM)
- Fuzzy clustering
- Hierarchical Clustering
- K-means algorithm
- K-means clustering
- K-medians
- Mean-shift
- OPTICS algorithm

**Anomaly detection**

Anomaly detection

- k-nearest neighbors classification (k-NN)
- Local outlier factor

**Semi-supervised learning**

Semi-supervised learning

- Active learning—special case of semi-supervised learning in which a learning algorithm is able to interactively query the user (or some other information source) to obtain the desired outputs at new data points.
- Generative models
- Low-density separation
- Graph-based methods
- Co-training
- Transduction

**Deep learning**

Deep learning

- Deep belief networks
- Deep Boltzmann machines
- Deep Convolutional neural networks
- Deep Recurrent neural networks
- Hierarchical temporal memory
- Deep Boltzmann Machine (DBM)
- Stacked Auto-Encoders

**Other machine learning methods and problems**

- Anomaly detection
- Association rules
- Bias-variance dilemma
- Classification
- Multi-label classification
- Clustering
- Data Pre-processing
- Empirical risk minimization
- Feature engineering
- Feature learning
- Learning to rank
- Occam learning
- Online machine learning
- PAC learning
- Regression
- Reinforcement Learning
- Semi-supervised learning
- Statistical learning
- Structured prediction
  - Graphical models
    - Bayesian network
    - Conditional random field (CRF)
    - Hidden Markov model (HMM)
- Unsupervised learning
- VC theory

### Machine learning research

**Machine learning research**

- List of artificial intelligence projects
- List of datasets for machine learning research

### History of machine learning

**History of machine learning**

- Timeline of machine learning

### Machine learning projects

**Machine learning projects**

- DeepMind
- Google Brain

### Machine learning organizations

**Machine learning organizations**

- Knowledge Engineering and Machine Learning Group

### Machine learning conferences and workshops

- Artificial Intelligence and Security (AISec) (co-located workshop with CCS)
- Conference on Neural Information Processing Systems (NIPS)
- ECML PKDD
Machine learning publications

Books on machine learning
Books about machine learning

Machine learning journals
- *Machine Learning*
- *Journal of Machine Learning Research* (JMLR)
- *Neural Computation*

Persons influential in machine learning
- Alberto Broggi
- Andrei Knyazev
- Andrew McCallum
- Andrew Ng
- Armin B. Cremers
- Ayanna Howard
- Barney Pell
- Ben Goertzel
- Ben Taskar
- Bernhard Schölkopf
- Brian D. Ripley
- Christopher G. Atkeson
- Corinna Cortes
- Demis Hassabis
- Douglas Lenat
- Eric Xing
- Ernst Dickmanns
- Geoffrey Hinton – co-inventor of the backpropagation and contrastive divergence training algorithms
- Hans-Peter Kriegel
- Hartmut Neven
- Heikki Mannila
- Jacek M. Zurada
- Jaime Carbonell
- Jerome H. Friedman
- John D. Lafferty
- John Platt – invented SMO and Platt scaling
- Julie Beth Lovins
- Jürgen Schmidhuber
- Karl Steinbuch
- Katia Sycara
- Leo Breiman – invented bagging and random forests
- Lise Getoor
- Luca Maria Gambardella
- Léon Bottou
- Marcus Hutter
- Mehryar Mohri
- Michael Collins
- Michael I. Jordan
- Michael L. Littman
- Nando de Freitas
- Ofer Dekel
- Oren Etzioni
- Pedro Domingos
- Peter Flach
- Pierre Baldi
- Pushmeet Kohli
- Ray Kurzweil
- Rayid Ghani
- Ross Quinlan
- Salvatore J. Stolfo
- Sebastian Thrun
- Selmer Bringsjord
- Sepp Hochreiter
- Shane Legg
- Stephen Muggleton
- Steve Omohundro
- Tom M. Mitchell
- Trevor Hastie
- Vasant Honavar
- Vladimir Vapnik – co-inventor of the SVM and VC theory
- Yann LeCun – invented convolutional neural networks
- Yasuo Matsuyama
- Yoshua Bengio
- Zoubin Ghahramani

See also

- Outline of artificial intelligence
  - Outline of computer vision
  - Outline of natural language processing
- Outline of robotics
- Accuracy paradox
- Action model learning
- Activation function
- Activity recognition
- ADALINE
- Adaptive neuro fuzzy inference system
- Adaptive resonance theory
- Additive smoothing
- Adjusted mutual information
- Aika (software)
- AIVA
- AIXI
- AlchemyAPI
- AlexNet
- Algorithm selection
- Algorithmic inference
- Algorithmic learning theory
- AlphaGo
- AlphaGo Zero
- Alternating decision tree
- Apprenticeship learning
- Causal Markov condition
- Competitive learning
- Concept learning
- Decision tree learning
- Distribution learning theory
- Eager learning
- End-to-end reinforcement learning
- Error tolerance (PAC learning)
- Explanation-based learning
- Feature
- GloVe
- Hyperparameter
- IBM Machine Learning Hub
- Inferential theory of learning
- Learning automata
- Learning classifier system
- Learning rule
- Learning with errors
- M-Theory (learning framework)
- Machine learning control
- Machine learning in bioinformatics
- Margin
- Markov chain geostatistics
- Markov chain Monte Carlo (MCMC)
- Markov information source
- Markov logic network
- Markov model
- Markov random field
- Markovian discrimination
- Maximum-entropy Markov model
- Multi-armed bandit
- Multi-task learning
- Multilinear subspace learning
- Multimodal learning
- Multiple instance learning
- Multiple-instance learning
- Never-Ending Language Learning
- Offline learning
- Parity learning
- Population-based incremental learning
- Predictive learning
- Preference learning
- Proactive learning
- Proximal gradient methods for learning
- Semantic analysis
- Similarity learning
- Sparse dictionary learning
- Stability (learning theory)
- Statistical learning theory
- Statistical relational learning
- Tanagra
- Transfer learning
- Variable-order Markov model
- Version space learning
- Waffles
- Weka

- Loss function
  - Loss functions for classification
  - Mean squared error (MSE)
  - Mean squared prediction error (MSPE)
  - Taguchi loss function
  - Low-energy adaptive clustering hierarchy

**Other**

- Anne O'Tate
- Ant colony optimization algorithms
- Anthony Levandowski
- Anti-unification (computer science)
- Apache Flume
- Apache Giraph
- Apache Mahout
- Apache SINGA
- Apache Spark
- Apache SystemML
- Aphelion (software)
- Arabic Speech Corpus
- Archetypal analysis
- Arthur Zimek
- Artificial ants
- Artificial bee colony algorithm
- Artificial development
- Artificial immune system
- Astrostatistics
- Averaged one-dependence estimators
- Bag-of-words model
- Balanced clustering
- Ball tree
- Base rate
- Bat algorithm
- Baum–Welch algorithm
- Bayesian hierarchical modeling
- Bayesian interpretation of kernel regularization
- Bayesian optimization
- Bayesian structural time series
- Bees algorithm
- Behavioral clustering
- Bernoulli scheme
- Bias–variance tradeoff
- Biclustering
- Binarization of consensus partition matrices
- Binary classification
- Bing Predicts
- Bio-inspired computing
- Biogeography-based optimization
- Biplot
- Bondy's theorem
- Bongard problem
- Bradley–Terry model
- BrownBoost
- Brown clustering
- Burst error
- CBCL (MIT)
- CIML community portal
- CMA-ES
- CURE data clustering algorithm
- Cache language model
- Calibration (statistics)
- Canonical correspondence analysis
- Canopy clustering algorithm
- Cascading classifiers
- Category utility
- CellCognition
- Cellular evolutionary algorithm
- Chi-square automatic interaction detection
- Chromosome (genetic algorithm)
- Classifier chains
- Cleverbot
- Clonal selection algorithm
- Cluster-weighted modeling
- Clustering high-dimensional data
- Clustering illusion
- CoBoosting
- Cobweb (clustering)
- Cognitive computer
- Cognitive robotics
- Collostructional analysis
- Common-method variance
- Complete-linkage clustering
- Computer-automated design
- Concept class
- Concept drift
- Conference on Artificial General Intelligence
- Conference on Knowledge Discovery and Data Mining
- Confirmatory factor analysis
- Confusion matrix
- Congruence coefficient
- Connect (computer system)
- Consensus clustering
- Constrained clustering
- Constrained conditional model
- Constructive cooperative coevolution
- Correlation clustering
- Correspondence analysis
- Cortica
- Coupled pattern learner
- Cross-entropy method
- Cross-validation (statistics)
- Crossover (genetic algorithm)
- Cuckoo search
- Cultural algorithm
- Cultural consensus theory
- Curse of dimensionality
- DADiSP
- DARPA LAGR Program
- Darkforest
- Dartmouth workshop
- DarwinTunes
- Data Mining Extensions
- Data exploration
- Data pre-processing
- Data stream clustering
- Dataiku
- Davies–Bouldin index
- Decision boundary
- Decision list
- Decision tree model
- Deductive classifier
- DeepArt
- DeepDream
- Deep Web Technologies
- Defining length
- Dendrogram
- Dependability state model
- Detailed balance
- Determining the number of clusters in a data set
- Detrended correspondence analysis
- Developmental robotics
- Diffbot
- Differential evolution
- Discrete phase-type distribution
- Discriminative model
- Dissociated press
- Distributed R
- Dlib
- Document classification
- Documenting Hate
- Domain adaptation
- Doubly stochastic model
- Dual-phase evolution
- Dunn index
- Dynamic Bayesian network
- Dynamic Markov compression
- Dynamic topic model
- Dynamic unobserved effects model
- EDLUT
- ELKI
- Edge recombination operator
- Effective fitness
- Elastic map
- Elastic matching
- Elbow method (clustering)
- Emergent (software)
- Encog
- Entropy rate
- Erkki Oja
- Eurisko
- European Conference on Artificial Intelligence
- Evaluation of binary classifiers
- Evolution strategy
- Evolution window
- Evolutionary Algorithm for Landmark Detection
- Evolutionary algorithm
- Evolutionary art
- Evolutionary music
- Evolutionary programming
- Evolvability (computer science)
- Evolved antenna
- Evolver (software)
- Evolving classification function
- Expectation propagation
- Exploratory factor analysis
- F1 score
- FLAME clustering
- Factor analysis of mixed data
- Factor graph
- Factor regression model
- Factored language model
- Farthest-first traversal
- Fast-and-frugal trees
- Feature Selection Toolbox
- Feature hashing
- Feature scaling
- Feature vector
- Firefly algorithm
- First-difference estimator
- First-order inductive learner
- Fish School Search
- Fisher kernel
- Fitness approximation
- Fitness function
- Fitness proportionate selection
- Fluentd
- Folding@home
- Formal concept analysis
- Forward algorithm
- Fowlkes–Mallows index
- Frederick Jelinek
- Frrole
- Functional principal component analysis
- GATTO
- GLIMMER
- Gary Bryce Fogel
- Gaussian adaptation
- Gaussian process
- Gaussian process emulator
- Gene prediction
- General Architecture for Text Engineering
- Generalization error
- Generalized canonical correlation
- Generalized filtering
- Generalized iterative scaling
- Information gain in decision trees
- Information gain ratio
- Inheritance (genetic algorithm)
- Instance selection
- Intel RealSense
- Interacting particle system
- Interactive machine translation
- International Joint Conference on Artificial Intelligence
- International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics
- International Semantic Web Conference
- Iris flower data set
- Island algorithm
- Isotropic position
- Item response theory
- Iterative Viterbi decoding
- JOONE
- Jabberwacky
- Jaccard index
- Jackknife variance estimates for random forest
- Java Grammatical Evolution
- Joseph Nechvatal
- Jubatus
- Julia (programming language)
- Junction tree algorithm
- K-SVD
- K-means++
- K-medians clustering
- K-medoids
- KNIME
- KXEN Inc.
- K q-flats
- Kaggle
- Kalman filter
- Katz's back-off model
- Keras
- Kernel adaptive filter
- Kernel density estimation
- Kernel eigenvoice
- Kernel embedding of distributions
- Kernel method
- Kernel perceptron
- Kernel random forest
- Kinect
- Klaus-Robert Müller
- Kneser–Ney smoothing
- Knowledge Vault
- Knowledge integration
- LIBSVM
- LPBoost
- Labeled data
- LanguageWare
- Language Acquisition Device (computer)
- Language identification in the limit
- Language model
- Large margin nearest neighbor
- Mountain car problem
- Movidius
- Multi-armed bandit
- Multi-label classification
- Multi expression programming
- Multiclass classification
- Multidimensional analysis
- Multifactor dimensionality reduction
- Multilinear principal component analysis
- Multiple correspondence analysis
- Multiple discriminant analysis
- Multiple factor analysis
- Multiple sequence alignment
- Multiplicative weight update method
- Multispectral pattern recognition
- Mutation (genetic algorithm)
- MysteryVibe
- N-gram
- NOMINATE (scaling method)
- Native-language identification
- Natural Language Toolkit
- Natural evolution strategy
- Nearest-neighbor chain algorithm
- Nearest centroid classifier
- Nearest neighbor search
- Neighbor joining
- Nest Labs
- NetMiner
- NetOwl
- Neural Designer
- Neural Engineering Object
- Neural Lab
- Neural modeling fields
- Neural network software
- NeuroSolutions
- Neuro Laboratory
- Neuroevolution
- Neuroph
- Niki.ai
- Noisy channel model
- Noisy text analytics
- Nonlinear dimensionality reduction
- Novelty detection
- Nuisance variable
- Numenta
- One-class classification
- Onnx
- OpenNLP
- Optimal discriminant analysis
- Oracle Data Mining
- Orange (software)
- Ordination (statistics)
- Overfitting
- PROGOL
- PSIPRED
- Pachinko allocation
- PageRank
- Parallel metaheuristic
- Parity benchmark
- Part-of-speech tagging
- Particle swarm optimization
- Path dependence
- Pattern language (formal languages)
- Peltarion Synapse
- Perplexity
- Persian Speech Corpus
- Picas (app)
- Pietro Perona
- Pipeline Pilot
- Piranha (software)
- Pitman–Yor process
- Plate notation
- Polynomial kernel
- Pop music automation
- Population process
- Portable Format for Analytics
- Predictive Model Markup Language
- Predictive state representation
- Preference regression
- Premature convergence
- Principal geodesic analysis
- Prior knowledge for pattern recognition
- Prisma (app)
- Probabilistic Action Cores
- Probabilistic context-free grammar
- Probabilistic latent semantic analysis
- Probabilistic soft logic
- Probability matching
- Probit model
- Product of experts
- Programming with Big Data in R
- Proper generalized decomposition
- Pruning (decision trees)
- Pushpak Bhattacharyya
- Q methodology
- Qloo
- Quality control and genetic algorithms
- Quantum Artificial Intelligence Lab
- Queueing theory
- Quick, Draw!
- R (programming language)
- Rada Mihalcea
- Rademacher complexity
- Radial basis function kernel
- Rand index
- Random indexing
- Random projection
- Random subspace method
- Ranking SVM
- RapidMiner
- Rattle GUI
- Raymond Cattell
- Reasoning system
- Regularization perspectives on support vector machines
- Relational data mining
- Relationship square
- Relevance vector machine
- Relief (feature selection)
- Renjin
- Repertory grid
- Representer theorem
- Reward-based selection
- Richard Zemel
- Right to explanation
- RoboEarth
- Robust principal component analysis
- RuleML Symposium
- Rule induction
- Rules extraction system family
- SAS (software)
- SNNS
- SPSS Modeler
- SUBCLU
- Sample complexity
- Sample exclusion dimension
- Santa Fe Trail problem
- Savi Technology
- Schema (genetic algorithms)
- Search-based software engineering
- Selection (genetic algorithm)
- Self-Service Semantic Suite
- Semantic folding
- Semantic mapping (statistics)
- Semidefinite embedding
- Sense Networks
- Sensorium Project
- Sequence labeling
- Sequential minimal optimization
- Shattered set
- Shogun (toolbox)
- Silhouette (clustering)
- SimHash
- SimRank
- Similarity measure
- Simple matching coefficient
- Simultaneous localization and mapping
- Sinkov statistic
- Sliced inverse regression
- SmartMatch
- Snakes and Ladders
- Soft independent modelling of class analogies
- Soft output Viterbi algorithm
- Solomonoff’s theory of inductive inference
- SolveIT Software
- Spectral clustering
- Spike-and-slab variable selection
- Statistical machine translation
- Statistical parsing
- Statistical semantics
- Stefano Soatto
- Stephen Wolfram
- Stochastic block model
- Stochastic cellular automaton
- Stochastic diffusion search
- Stochastic grammar
- Stochastic matrix
- Stochastic universal sampling
- Stress majorization
- String kernel
- Structural equation modeling
- Structural risk minimization
- Structured sparsity regularization
- Structured support vector machine
- Subclass reachability
- Sufficient dimension reduction
- Sukhotin's algorithm
- Sum of absolute differences
- Sum of absolute transformed differences
- Swarm intelligence
- Switching Kalman filter
- Symbolic regression
- Synchronous context-free grammar
- Syntactic pattern recognition
- TD-Gammon
- TIMIT
- Teaching dimension
- Teuvo Kohonen
- Textual case-based reasoning
- Theory of conjoint measurement
- Thomas G. Dietterich
- Thurstonian model
- Topic model
- Tournament selection
- Training, test, and validation sets
- Transiogram
- Trax Image Recognition
- Trigram tagger
- Truncation selection
- Tucker decomposition
- UIMA
- UPGMA
- Ugly duckling theorem
- Uncertain data
- Uniform convergence in probability
- Unique negative dimension
- Universal portfolio algorithm
- User behavior analytics
- VC dimension
- VGG Image Annotator
- VIGRA
Further reading

- Ray Solomonoff, "An Inductive Inference Machine" A privately circulated report from the 1956 Dartmouth Summer Research Conference on AI.

References

1. [http://www.britannica.com/EBchecked/topic/1161944/machine-learning](http://www.britannica.com/EBchecked/topic/1161944/machine-learning) This tertiary source reuses information from other sources but does not name them.


**External links**

- Data Science: Data to Insights from MIT (machine learning)
- Popular online course by Andrew Ng at Coursera. It uses GNU Octave. The course is a free version of Stanford University's actual course taught by Ng, see.stanford.edu/Course/CS229 available for free.
- mloss is an academic database of open-source machine learning software.