

# Notations and acronyms

## Abstract

Please try to stick as much as possible to the following notations and acronyms when preparing your chapter.

For notations, it will probably not be possible to be completely homogeneous across all chapters due to different conventions in different fields but please try to stick to them as much as possible, at least for the most basic ones. **You can also propose modifications if you believe some of the notations to be inadequate. Please also add the notations that you use in your chapter and that are not yet defined here. To that purpose, simply edit this overleaf document. Please log in using your overleaf account so that I can see who is making the changes.**

For acronyms, you are of course welcome to use the full name whenever you feel it is more elegant (e.g. preferring “deep learning” over DL). Moreover, you should define any acronym at its first occurrence in your chapter so that chapters can be read independently from each others. On the other hand, never use another acronym than that defined here for a given term (e.g. don’t use “ConvNet” for convolutional neural network but use “CNN” instead). **Finally, the list of acronyms is far from complete. Please add those that you use in your chapter. To that purpose, simply edit this overleaf document. Please log in using your overleaf account so that I can see who is making the changes.**

## 1. Notations

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Some of the notations are taken from the book: Goodfellow, Bengio and Courville, *Deep learning*, MIT Press, 2016.

### 1.1 Numbers, vectors, matrices and tensors

$a$	A scalar
$\mathbf{a}$	A vector
$\mathbf{A}$	A matrix
$\mathbf{A}$	A tensor
$\mathbf{I}_n$	Identity matrix with $n$ rows and $n$ columns
$\mathbf{I}$	Identity matrix with dimensionality implied by context
$\mathbf{e}^{(i)}$	Standard basis vector $[0, \dots, 0, 1, 0, \dots, 0]$ with a 1 at position $i$
$\text{diag}(\mathbf{a})$	A square, diagonal matrix with diagonal entries given by $\mathbf{a}$
$a$	A scalar random variable
$\mathbf{a}$	A vector-valued random variable
$\mathbf{A}$	A matrix-valued random variable

### 1.2 Sets

$\mathcal{A}$	A set (except when referring to a standard set of numbers such as $\mathbb{R}$ or $\mathbb{N}$ )
$\mathbb{N}$	The set of natural numbers
$\mathbb{R}$	The set of real numbers
$\{0, 1\}$	The set containing 0 and 1
$\{0, 1, \dots, n\}$	The set of all integers between 0 and $n$
$[a, b]$	The real interval including $a$ and $b$
$(a, b]$	The real interval excluding $a$ but including $b$

$\otimes_i \mathbb{R}$   $n$ -ary Cartesian product between real spaces

### 1.3 Indexing

$a_i$  Element  $i$  of vector  $\mathbf{a}$ , with indexing starting at 1

$a_{-i}$  All elements of vector  $\mathbf{a}$  except for element  $i$

$A_{i,j}$  Element  $i, j$  of matrix  $\mathbf{A}$

$\mathbf{A}_{i,:}$  Row  $i$  of matrix  $\mathbf{A}$

$\mathbf{A}_{:,i}$  Column  $i$  of matrix  $\mathbf{A}$

$A_{i,j,k}$  Element  $(i, j, k)$  of a 3-D tensor  $\mathbf{A}$

$\mathbf{A}_{::,i}$  2-D slice of a 3-D tensor

$a_i$  Element  $i$  of the random vector  $\mathbf{a}$

### 1.4 Linear Algebra Operations

$\mathbf{A}^\top$  Transpose of matrix  $\mathbf{A}$

$\mathbf{A}^+$  Moore-Penrose pseudoinverse of  $\mathbf{A}$

$\mathbf{A} \odot \mathbf{B}$  Element-wise (Hadamard) product of  $\mathbf{A}$  and  $\mathbf{B}$

$\det(\mathbf{A})$  Determinant of  $\mathbf{A}$

### 1.5 Calculus

$\frac{dy}{dx}$  Derivative of  $y$  with respect to  $x$

$\frac{\partial y}{\partial x}$  Partial derivative of  $y$  with respect to  $x$

$\nabla_{\mathbf{x}} y$  Gradient of  $y$  with respect to  $\mathbf{x}$

$\nabla_{\mathbf{X}} y$  Matrix derivatives of  $y$  with respect to  $\mathbf{X}$

$\nabla_{\mathbf{x}} y$  Tensor containing derivatives of  $y$  with respect to  $\mathbf{X}$

$\int f(\mathbf{x}) d\mathbf{x}$  Definite integral over the entire domain of  $\mathbf{x}$

$\int_{\mathcal{S}} f(\mathbf{x}) d\mathbf{x}$  Definite integral with respect to  $\mathbf{x}$  over the set  $\mathcal{S}$

## 1.6 Probability and Information Theory

$a \perp b$	The random variables $a$ and $b$ are independent
$a \perp b \mid c$	They are conditionally independent given $c$
$P(a)$	A probability distribution over a discrete variable
$p(a)$	A probability distribution over a continuous variable, or over a variable whose type has not been specified
$a \sim P$	Random variable $a$ has distribution $P$
$\mathbb{E}_{x \sim P}[f(x)]$ or $\mathbb{E}f(x)$	Expectation of $f(x)$ with respect to $P(x)$
$\text{Var}(f(x))$	Variance of $f(x)$ under $P(x)$
$\text{Cov}(f(x), g(x))$	Covariance of $f(x)$ and $g(x)$ under $P(x)$
$H(x)$	Shannon entropy of the random variable $x$
$D_{\text{KL}}(P \parallel Q)$	Kullback-Leibler divergence of $P$ and $Q$
$\mathcal{N}(\mathbf{x}; \boldsymbol{\mu}, \boldsymbol{\Sigma})$	Gaussian distribution over $\mathbf{x}$ with mean $\boldsymbol{\mu}$ and covariance $\boldsymbol{\Sigma}$

## 1.7 Functions

$f : \mathcal{A} \rightarrow \mathcal{B}$	The function $f$ with domain $\mathcal{A}$ and range $\mathcal{B}$
$f \circ g$	Composition of the functions $f$ and $g$
$f(\mathbf{x}; \mathbf{w})$	A function of $\mathbf{x}$ parametrized by $\mathbf{w}$ . (Sometimes we write $f(\mathbf{x})$ and omit the argument $\mathbf{w}$ to lighten notation)
$\log x$	Natural logarithm of $x$
$\sigma(x)$	Logistic sigmoid, $\frac{1}{1 + \exp(-x)}$
Softmax	Softmax, $\frac{e_i^x}{\sum_j e_j^x}$
$\zeta(x)$	Softplus, $\log(1 + \exp(x))$

$\tanh$	Hyperbolic tangent
$\ \mathbf{x}\ _p$	$L^p$ norm of $\mathbf{x}$
$\ \mathbf{x}\ $	$L^2$ norm of $\mathbf{x}$
$x^+$	Positive part of $x$ , i.e., $\max(0, x)$
$\mathbf{1}_{\text{condition}}$	is 1 if the condition is true, 0 otherwise

Sometimes we use a function  $f$  whose argument is a scalar but apply it to a vector, matrix, or tensor:  $f(\mathbf{x})$ ,  $f(\mathbf{X})$ , or  $f(\mathbf{X})$ . This denotes the application of  $f$  to the array element-wise. For example, if  $\mathbf{C} = \sigma(\mathbf{X})$ , then  $C_{i,j,k} = \sigma(X_{i,j,k})$  for all valid values of  $i$ ,  $j$  and  $k$ .

## 1.8 Datasets and Distributions

$p_{\text{data}}$	The data generating distribution
$\hat{p}_{\text{data}}$	The empirical distribution defined by the training set
$\mathbf{x}^{(i)}$	The $i$ -th example (input) from a dataset
$\mathbf{y}^{(i)}$ or $\mathbf{y}^{(i)}$	The target associated with $\mathbf{x}^{(i)}$ for supervised learning
$\mathbf{X}$	The $n \times p$ matrix with input example $\mathbf{x}^{(i)}$ in row $\mathbf{X}_{i,:}$

## 1.9 Machine learning specific notations

$x$	The input (univariate case)
$\mathbf{x}$	The input (multivariate case)
$y$	The output (univariate case)
$\mathbf{y}$	The output (multivariate case)
$p$	The number of input features
$n$	The number of training samples
$x^{(1)}, \dots, x^{(n)}$ , indexed by $i$	Training input samples (univariate)
$\mathbf{x}^{(1)}, \dots, \mathbf{x}^{(n)}$ , indexed by $i$	Training input samples (multivariate)
$y^{(1)}, \dots, y^{(n)}$ , indexed by $i$	Training output samples

$(\mathbf{x}^{(1)}, y^{(1)}), \dots, (\mathbf{x}^{(n)}, y^{(n)})$	Training set
$f$ such that $y = f(\mathbf{x})$	The model
$\mathcal{F}$	Set of possible models, $f \in \mathcal{F}$
$\hat{f}$	The learned model
$\hat{y} = \hat{f}(x)$	The predicted output
$\mathbf{w} = \begin{bmatrix} w_0 \\ \vdots \\ w_p \end{bmatrix}$ , indexed by $j$	The parameters of the model (single-layer case)
$w_{j,k}$ , layers indexed by $k$	The parameters of the model (multi-layer case)
$f(\mathbf{x}) = \mathbf{w}^\top \mathbf{x}$	a linear model (with $x_0 = 1$ )
$f(\mathbf{x}; \mathbf{w})$	Model, depending on parameters
$\ell(y, f(\mathbf{x}))$	Loss
$J(f) = \frac{1}{n} \sum_{i=1}^n \ell(y^{(i)}, f(\mathbf{x}^{(i)}))$	The cost function
$J(\mathbf{w}) = \frac{1}{n} \sum_{i=1}^n \ell(y^{(i)}, f(\mathbf{x}^{(i)}; \mathbf{w}))$	Cost function (as a function of parameters $\mathbf{w}$ )
$\hat{f} = \arg \min_{f \in \mathcal{F}} J(f)$	Learning process
$\nabla_{\mathbf{w}} J$	Gradient of the cost function
$g$	Non-linear activation function
$\eta$	Learning rate
$\phi$	Feature extraction function

## 2. Acronyms

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### 2.1 Machine learning and statistics

<b>Adagrad</b>	Adaptive Gradient optimizer
<b>AE</b>	Autoencoder
<b>AI</b>	Artificial Intelligence
<b>ARDM</b>	Auto-Regressive Diffusion Models
<b>ASSD</b>	Average symmetric surface distance
<b>AUC</b>	Area Under the curve (can apply to ROC curve or PR curve for instance)
<b>BA</b>	Balanced accuracy
<b>Bi-LSTM</b>	Bi-directional Long Short-Term Memory
<b>BRNN</b>	Bi-directional Recurrent Neural Network
<b>BPTT</b>	Back Propagation through Time
<b>CA</b>	Cross-Attention
<b>CC</b>	Cross Correlation
<b>CCA</b>	Canonical Correlation Analysis
<b>CDF</b>	Cumulative Density Function
<b>cGAN</b>	Conditional Generative Adversarial Network
<b>CLIP</b>	Contrastive Language-Image Pretraining
<b>C-LSTM</b>	Convolutional Long Short-Term Memory
<b>CNN</b>	Convolutional Neural Network
<b>CPAB</b>	Continuous Piecewise Affine-Based
<b>CV</b>	Cross-validation
<b>D3PM</b>	Data-driven disease progression modelling
<b>DDPM</b>	Denoising Diffusion Probabilistic Models
<b>DCGAN</b>	Deep Convolutional Generative Adversarial Network
<b>DEBM</b>	Discriminative Event-Based Model

<b>DL</b>	Deep Learning
<b>dof</b>	Degrees of Freedom
<b>DPCE</b>	Distance map Penalized Cross Entropy loss
<b>DPS</b>	Disease Progression Score
<b>DRAM</b>	Deep Recurrent Attention Model
<b>DRNN</b>	Disconnected Recurrent Neural Network
<b>DSC</b>	Dice similarity coefficient
<b>DT</b>	Decision Tree
<b>EBM</b>	Event-Based Model
<b>EFA</b>	Exploratory factor analysis
<b>ELBO</b>	Evidence Lower Bound
<b>ELL</b>	Exponential Logarithmic Loss
<b>EM</b>	Expectation-Maximization
<b>FCN</b>	Fully Connected Network
<b>FCNN</b>	Fully Convolutional Neural Network
<b>FDR</b>	False Discovery Rate
<b>FID</b>	Fréchet Inception Distance
<b>FLOP</b>	Floating Point Operations
<b>FN</b>	False Negative
<b>FP</b>	False Positive
<b>FROC</b>	Free-response ROC
<b>iCDF</b>	Inverse Cumulative Density Function
<b>i.i.d.</b>	Independent and identically distributed
<b>G2PSR</b>	Genome-to-Phenome Sparse Regression
<b>GAN</b>	Generative Adversarial Network
<b>GD</b>	Generalized Dice loss
<b>GMM</b>	Gaussian Mixture Model
<b>GPPM</b>	Gaussian Process Progression Model

<b>GRU</b>	Gated Recurrent Unit
<b>HD</b>	Hausdorff Distance
<b>HYDRA</b>	Heterogeneity through Discriminative Analysis
<b>ICA</b>	Independent Component Analysis
<b>IoU</b>	Intersection over Union also called JI
<b>JI</b>	Jaccard index also called IoU
<b>JS/JSD</b>	Jensen-Shannon Divergence
<b>KDE</b>	Kernel Density Estimate
<b>KDE-EBM</b>	Kernel Density Estimation EBM
<b>KL/KLD</b>	Kullback-Leibler Divergence
<b>kNN</b>	$k$ -nearest neighbors
<b>LASSO</b>	Least Absolute Shrinkage and Selection Operator
<b>LDA</b>	Linear Discriminant Analysis
<b>LDDMM</b>	Large Deformation Diffeomorphic Metric Mapping
<b>LJTMM</b>	Latent Time Joint Mixed Model
<b>LR</b>	Logistic Regression
<b>LR+</b>	Positive Likelihood Ratio
<b>LR-</b>	Negative Likelihood Ratio
<b>LP</b>	Linear Programming
<b>LSTM</b>	Long Short-Term Memory
<b>MAE</b>	Mean Absolute Error
<b>MAP</b>	Maximum a Posteriori
<b>MCA</b>	Multi-head Cross-Attention
<b>MCMC</b>	Markov Chain Monte Carlo
<b>MAGIC</b>	Multi-scale heterogeneity analysis and Clustering
<b>mcVAE</b>	Multi-Channel Variational Autoencoder
<b>MI</b>	Mutual Information
<b>ML</b>	Machine Learning

<b>MLE</b>	Maximum Likelihood Estimation
<b>MLP</b>	Multi-Layer Perceptron
<b>MMSA</b>	Masked Multi-head Self-Attention
<b>MSA</b>	Multi-head Self-Attention
<b>MSE</b>	Mean Squared Error
<b>NB</b>	Naive Bayes
<b>NCC</b>	Normalized Cross Correlation
<b>NIPALS</b>	Non-linear Iterative Partial Least Squares
<b>NLP</b>	Natural Language Processing
<b>NMF</b>	Non-negative Matrix Factorization
<b>NMI</b>	Normalized Mutual Information
<b>NMT</b>	Neural Machine Translation
<b>NN</b>	Neural Network
<b>NPV</b>	Negative Predictive Value
<b>PCA</b>	Principal Component Analysis
<b>PDF</b>	Probability Density Function
<b>PE</b>	Positional Encoding
<b>PLS</b>	Partial Least Squares
<b>PLSR</b>	Partial Least Square Regression
<b>PPV</b>	Positive Predictive Value
<b>RAVEL</b>	Removal of Artificial Voxel Effect by Linear regression
<b>RBF</b>	Radial Basis Function
<b>RCNN</b>	Region Convolutional Neural Network
<b>ReLU</b>	Rectified Linear Unit
<b>ResNet</b>	Residual Neural Network
<b>RKHS</b>	Reproducing Kernel Hilbert Space
<b>RMSE</b>	Root Mean Square Error

<b>RMSProp</b>	Root Mean Squared Propagation
<b>RNN</b>	Recurrent Neural Network
<b>RF</b>	Random Forest
<b>ROC</b>	Receiver Operating Characteristic curve
<b>SA</b>	Self-Attention
<b>SD</b>	Standard Deviation
<b>SDG</b>	Stochastic Gradient Descent
<b>Smile-GAN</b>	Semi-supervised cLustering via GANs
<b>SS</b>	Sensitivity-Specificity loss
<b>SSD</b>	Sum of Square Differences
<b>SSL</b>	Semi-Supervised Learning
<b>STN</b>	Spatial Transformer Network
<b>SuLign</b>	Subtyping Alignment
<b>SuStaIn</b>	Subtype and Stage Inference
<b>SVD</b>	Singular Value Decomposition
<b>SVM</b>	Support Vector Machine
<b>TEBM</b>	Temporal Event-Based Model
<b>TN</b>	True Negative
<b>TNR</b>	True Negative Rate
<b>TP</b>	True Positive
<b>TPR</b>	True Positive Rate
<b>UDA</b>	Unsupervised Data Augmentation
<b>UAD</b>	Unsupervised Anomaly Detection
<b>VAE</b>	Variational Autoencoder
<b>VA-GAN</b>	Visual Attribution Generative Adversarial Network
<b>VCCA</b>	Deep Variational CCA
<b>ViT</b>	Vision Transformer
<b>ViViT</b>	Video Vision Transformer

<b>VQ-VAE</b>	Vector Quantization Variational Autoencoder
<b>VQGAN</b>	Vector Quantization Generative Adversarial Network
<b>WCE</b>	Weighted Cross Entropy loss
<b>WGAN</b>	Wasserstein Generative Adversarial Network
<b>xAI</b>	eXplainable AI

## 2.2 Data

<b>ABC</b>	Activities-Specific Balance Confidence
<b>ADC</b>	Apparent Diffusion Coefficient
<b>ADAS</b>	Alzheimer’s disease assessment scale
<b>ASL</b>	Arterial Spin Labeling
<b>ASPECTS</b>	The Alberta stroke programme early CT score
<b>BAM</b>	Binary Alignment Map
<b>BCI</b>	Brain Computer Interface
<b>BMI</b>	Body Mass Index
<b>BOLD</b>	Blood-oxygen-level-dependent
<b>CARS</b>	Coherent Anti-Stokes Raman Scattering
<b>CBF</b>	Cerebral Blood flow
<b>CBV</b>	Cerebral Blood volume
<b>CDR</b>	Clinical Dementia Rating
<b>CPRD</b>	Clinical Practice Research Datalink
<b>CRAM</b>	Compressed Reference-oriented Alignment Map
<b>CT</b>	Computed Tomography
<b>CTA</b>	Computed Tomography Angiography
<b>CNV</b>	Copy number variant

<b>CSF</b>	cerebrospinal fluid
<b>CTV-3</b>	Clinical Terms Version 3
<b>DICOM</b>	Digital imaging and communications in medicine
<b>DIR</b>	Double Inversion Recovery MR sequence
<b>DSA</b>	Digital Subtraction Angiography
<b>DTI</b>	Diffusion Tensor Imaging
<b>DXA</b>	Dual-energy X-ray absorptiometry
<b>DWI</b>	Diffusion-Weighted Imaging
<b>EDSS</b>	Expanded Disability Status Scale
<b>EEG</b>	Electroencephalography
<b>EHR</b>	electronic health record
<b>FA</b>	Fractional Anisotropy
<b>FAIR</b>	Findable, Accessible, Interoperable, Reusable
<b>FASTA</b>	Fast-All format
<b>FDG-PET</b>	[18F]-fluorodeoxyglucose Positron Emission Tomography
<b>FLAIR</b>	Fluid-attenuated Inversion Recovery
<b>fMRI</b>	functional Magnetic Resonance Imaging
<b>GDPR</b>	General Data Protection Regulation
<b>GEO</b>	Gene Expression Omnibus
<b>GFF</b>	General Feature Format
<b>GIS</b>	Geographic Information Systems
<b>GPS</b>	Global Positioning System
<b>GRE</b>	Gradient-recalled Echo
<b>GO</b>	Gene Ontology
<b>GTE<sub>x</sub></b>	Genotype-Tissue Expression
<b>GWAS</b>	Genome-Wide Association Study
<b>HAR</b>	Human Activity Recognition
<b>HIPAA</b>	Health Insurance Portability and Accountability Act

<b>HUPO</b>	Human Proteome Organization
<b>ICD</b>	International Classification of Diseases
<b>ICF</b>	International Classification of Functioning, Disability and Health
<b>KEGG</b>	Kyoto Encyclopedia of Genes and Genomes
<b>MAR</b>	missing at random
<b>MCAR</b>	missing completely at random
<b>MD</b>	Mean Diffusivity
<b>MDS-UPDRS</b>	Movement Disorder Society Unified Parkinson's Disease Rating Scale (synonymous: UPDRS)
<b>MEG</b>	Magnetoencephalography
<b>MEM</b>	Micro Electro Mechanical system
<b>MICE</b>	multiple imputation is the use of chained equations
<b>MIDS</b>	Medical Imaging Data Structure
<b>MIP</b>	Maximal Intensity Projection
<b>MMSE</b>	Mini-mental state examination
<b>MNAR</b>	missing not at random
<b>MNI</b>	Montreal Neurological Institute
<b>MoCA</b>	Montreal Cognitive Assessment
<b>MRI</b>	Magnetic Resonance Imaging
<b>MRA</b>	Magnetic Resonance Angiography
<b>mRS</b>	the modified Rankin score
<b>MTR</b>	Magnetization Transfer Ratio
<b>mzML</b>	Mass Spectrometry Markup Language
<b>NGS</b>	Next Generation Sequencing
<b>NifTI</b>	Neuroimaging Informatics Technology Initiative
<b>NIVEL-PCD</b>	NIVEL Primary Care Database
<b>PIB-PET</b>	[11C]-Pittsburgh Compound B Positron Emission Tomography
<b>PSI</b>	HUPO Proteomics Standards Initiative

<b>RS-fMRI</b>	Resting State functional Magnetic Resonance Imaging
<b>PACS</b>	Picture Archiving and Communication System
<b>PD</b>	Proton-Density MR sequence
<b>PET</b>	Positron Emission Tomography
<b>PRS</b>	Polygenic Risk Score
<b>PSI</b>	Proteomics Standards Initiative
<b>PWI</b>	Perfusion Weighted Imaging
<b>QSM</b>	Quantitative Susceptibility Mapping
<b>QT</b>	Quantitative Traits
<b>r<math>\Delta</math>CBF</b>	relative CBF change
<b>SAM</b>	Sequence Alignment Map
<b>SNOMED-CT</b>	Systematized NOMenclature of MEDicine – Clinical Terms
<b>SNP</b>	Single nucleotide polymorphisms
<b>SPECT</b>	Single-Photon Emission Computed Tomography
<b>SRA</b>	Sequence Read Archive
<b>SRH</b>	Stimulated Raman scattering Histology
<b>SWI</b>	Susceptibility-Weighted Images
<b>STRIVE</b>	the STandards for ReportIng Vascular changes on nEuroimaging
<b>TICI</b>	Thrombolysis in Cerebral Infarction
<b>UMLS</b>	Unified Medical Language System
<b>UI</b>	User interface
<b>UPDRS</b>	Unified Parkinson’s disease rating scale
<b>UX</b>	User experience
<b>WGS</b>	Whole genome sequence
<b>WSI</b>	Whole Slide Image
<b>XML</b>	eXtensible Markup Language
<b>XNAT</b>	eXtensible Neuroimaging Archive Toolkit

## 2.3 Brain disorders

<b>AD</b>	Alzheimer's disease
<b>ADHD</b>	Attention Deficit Hyperactivity Disorder
<b>ALS</b>	Amyotrophic Lateral Sclerosis
<b>ASD</b>	Autism Spectrum Disorder
<b>AVM</b>	Arteriovenous Malformation
<b>BD</b>	Bipolar Disorder
<b>CADASIL</b>	Cerebral Autosomal Dominant Arteriopathy with subcortical infarcts and leukoencephalopathy
<b>CBD</b>	Cortico-basal Degeneration
<b>CIS</b>	Clinically Isolated Syndrome
<b>CN</b>	Healthy controls
<b>CMB</b>	Cerebral microbleed
<b>cSVD</b>	Cerebral Small Vessel Disease
<b>DLB</b>	Dementia with Lewy Bodies
<b>IA</b>	Intracranial Aneurysm
<b>ID</b>	Intelligence Disabilities
<b>FCD</b>	Focal Cortical Dysplasia
<b>FTLD</b>	Fronto-temporal lobar degeneration
<b>GBM</b>	Glioblastoma
<b>HC</b>	Healthy Controls
<b>HGG</b>	High-grade glioma
<b>HS</b>	Hippocampal Sclerosis
<b>iRBD</b>	Idiopathic Rapid eye movement sleep Behavior Disorder
<b>LATE</b>	Limbic-predominant age-related TDP-43 encephalopathy
<b>LGG</b>	Low-grade glioma
<b>LPA</b>	Logopenic Progressive Aphasia

<b>LVO</b>	Large Vessel Occlusion
<b>MS</b>	Multiple Sclerosis
<b>MSA</b>	Multiple System Atrophy
<b>MSA-C</b>	Cerebellar variant of Multiple System Atrophy
<b>MSA-P</b>	Parkinsonian variant of Multiple System Atrophy
<b>MDE</b>	Major depressive episode
<b>MDD</b>	Major depressive disorder
<b>MND</b>	Motor Neuron Disease
<b>NDDs</b>	Neurodevelopmental disorders
<b>NMOSD</b>	Neuromyelitis Optica Spectrum Disorder
<b>OCD</b>	Obsessive Compulsive Disorder
<b>PCA</b>	Posterior Cortical Atrophy
<b>PD</b>	Parkinson's disease
<b>PiD</b>	Pick's disease
<b>PPA</b>	Primary Progressive Aphasia
<b>PPMS</b>	Primary Progressive Multiple Sclerosis
<b>PML</b>	Progressive Multifocal Leukencephalopathy
<b>PSP</b>	Progressive Supranuclear Palsy
<b>PT</b>	Patient
<b>PTSD</b>	Post-Traumatic Stress Disorder
<b>RRMS</b>	Relapsing Remitting Multiple Sclerosis
<b>SUD</b>	Substance Use Disorder
<b>SPMS</b>	Secondary Progressive Multiple Sclerosis
<b>TLE</b>	Temporal Lobe Epilepsy
<b>VaD</b>	Vascular Dementia
<b>VCI</b>	Vascular Cognitive Impairment

## 2.4 Other medical and biological concepts

<b>ASR</b>	Age-standardized incidence rate
<b>ATP</b>	Adenosine Triphosphate
<b>CAD</b>	Computer Assisted Diagnosis
<b>CNS</b>	Central Nervous System
<b>CSF</b>	Cerebrospinal fluid
<b>CVR</b>	Cerebrovascular Reserve
<b>CA</b>	Cornu ammonis
<b>DAT</b>	Dopamine Transporter
<b>DBS</b>	Deep Brain Stimulation
<b>DSM-5</b>	5th edition of the Diagnostic and Statistical Manual of Mental Disorders
<b>DNA</b>	Deoxyribonucleic acid
<b>DZ</b>	Dizygotic
<b>ET</b>	Enhancing Tumor
<b>eQTL</b>	Expression quantitative trait loci
<b>FFPE</b>	Formalin-Fixed Paraffin-Embedded
<b>FOG</b>	Freezing of Gait
<b>GM</b>	Gray Matter
<b>H&amp;E</b>	Hematoxylin and Eosin
<b>IDH</b>	Isocitrate Dehydrogenase
<b>IHC</b>	Immunohistochemistry
<b>IQ</b>	Intelligence Quotient
<b>iRANO</b>	Immune-related Response Assessment in Neuro-Oncology
<b>MEDA</b>	Minimal Evidence of Disease Activity
<b>MGMT</b>	O6-Methylguanine-DNA Methyltransferase
<b>MZ</b>	Monozygotic
<b>mRNA</b>	Messenger RNA
<b>mTOR</b>	Mammalian Target of Rapamycin

<b>NAWM</b>	Normal Appearing White Matter
<b>ncRNA</b>	Non-coding RNA
<b>NEDA</b>	No Evidence of Disease Activity
<b>OCT</b>	Optimal Cutting Temperature
<b>PNS</b>	Peripheral Nervous System
<b>psPD</b>	pseudoprogession of disease
<b>PVS</b>	perivascular space
<b>RANO</b>	Response Assessment in Neuro-Oncology
<b>RECIST</b>	Response Evaluation Criteria in Solid Tumours
<b>REM</b>	Rapid Eye Movement
<b>RNA</b>	Ribonucleic acid
<b>TC</b>	Tumor Core
<b>TMZ</b>	temozolomide
<b>tRNA</b>	Transfer RNA
<b>VASARI</b>	Visually AcceSAble Rembrandt Images
<b>WM</b>	White Matter
<b>WMH</b>	White Matter Hyperintensity
<b>WT</b>	Whole Tumor

## 2.5 Main existing datasets

<b>ABCD</b>	Adolescent Brain Cognitive Development
<b>ADNI</b>	Alzheimer's disease neuroimaging initiative
<b>AIBL</b>	Australian Imaging Biomarkers and Lifestyle Study of Aging
<b>BATS</b>	Brisbane Adolescent Twin Study
<b>CIFAR</b>	Canadian Institute For Advanced Research

<b>CPM</b>	Computational Precision Medicine
<b>dbGAP</b>	Database of Genotypes and Phenotypes
<b>DIAN</b>	Dominantly Inherited Alzheimer Network
<b>ENIGMA</b>	Enhancing NeuroImaging Genetics Through Meta-Analysis
<b>GENFO</b>	Genetic FTD Initiative
<b>GEO</b>	Gene Expression Omnibus
<b>HCP-YA</b>	Human Connectome Project Young Adult
<b>MSD</b>	Medical Segmentation Decathlon
<b>NIH</b>	National Institute of Health
<b>OATS</b>	Older Adult Twin Study
<b>PPMI</b>	Parkinson's Progression Markers Initiative
<b>QTAB</b>	Queensland Twin Adolescent Brain
<b>QTIM</b>	Queensland Twin IMaging
<b>SRA</b>	Sequence Read Archive
<b>STR</b>	Swedish Twin Registry
<b>TOPMed</b>	Trans-omics precision Medicine
<b>UKB</b>	UK Biobank
<b>VETSA</b>	Vietnam Era Twin Study of Aging

## 2.6 Other

<b>ACR</b>	American College of Radiology
<b>AP-HP</b>	Assistance Publique-Hôpitaux de Paris
<b>ASNR</b>	American Society of Neuroradiology
<b>BraTS</b>	Brain Tumour Segmentation Challenge
<b>CAP</b>	College of American Pathologists

<b>CDRH</b>	Center for Devices and Radiological Health at FDA
<b>CLAIM</b>	Checklist for Artificial Intelligence in Medical imaging
<b>CP</b>	Computational Pathology
<b>CPM-RadPath</b>	Radiology-Pathology Challenge
<b>CTSA</b>	Clinical Translational Science Awards
<b>EEA</b>	European Economic Area
<b>EU</b>	European Union
<b>FDA</b>	United States Food and Drug Administration
<b>GPU</b>	Graphical Processing Unit
<b>IEEE</b>	Institute of Electrical and Electronics Engineer
<b>IPMI</b>	Information Processing in Medical Imaging conference
<b>ISBI</b>	International Symposium on Biomedical Imaging
<b>ISLES</b>	The Ischemic Stroke Lesion Segmentation
<b>MAGNIMS</b>	Magnetic Resonance Imaging in Multiple Sclerosis network
<b>MICCAI</b>	The Medical Image Computing and Computer Assisted Intervention Society
<b>MNIST</b>	Modified National Institute of Standards and Technology dataset
<b>NCBI</b>	National Center for Biotechnology Information
<b>NeurIPS</b>	Neuronal Information Processing Systems conference
<b>NINCDS-ADRDA</b>	National Institute of Neurological and Communicative Disorders and Stroke - Alzheimer's Disease and Related Disorders Association
<b>NIH</b>	National Institutes of Health
<b>NIVEL</b>	Netherlands Institute for Health Services Research
<b>OSF</b>	Open Science Framework
<b>RSNA</b>	Radiological Society of North America
<b>SPIE</b>	The Society for Photoelectrical Instrumentation Engineers The International Society for Optics and Photonics
<b>SPIRIT-AI</b>	Standard Protocol Items: Recommendations for Interventional Trials

<b>STARD-AI</b>	Standards For Reporting Diagnostic Accuracy Studies–Artificial Intel
<b>TRIPOD-ML</b>	Transparent Reporting of a Multivariable Prediction Model for Indivi
<b>WHO</b>	World Health Organization
<b>WUSTL</b>	Washington University in Saint Louis