Feature importance

Beware Default Random Forest Importances <https://explained.ai/rf-importance/index.html>

XML

<https://christophm.github.io/interpretable-ml-book/scope-of-interpretability.html>

Local Interpretable Model-Agnostic Explanations (LIME): An Introduction <https://www.oreilly.com/content/introduction-to-local-interpretable-model-agnostic-explanations-lime/>

“Why Should I Trust You?” Explaining the Predictions of Any Classifier <https://arxiv.org/pdf/1602.04938.pdf>

<https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1007792> RNA seq

A Clinically Interpretable Computer-Vision Based Method for Quantifying Gait in Parkinson’s Disease <https://www.mdpi.com/1424-8220/21/16/5437>

<https://neptune.ai/blog/explainability-auditability-ml-definitions-techniques-tools>

Overinterpretation reveals image classification model pathologies <https://arxiv.org/pdf/2003.08907.pdf>

https://news.mit.edu/2021/nonsense-can-make-sense-machine-learning-models-1215

Neuro

Training deep neural density estimators to identify mechanistic models of neural dynamics <https://elifesciences.org/articles/56261>

Deep Learning of Explainable EEG Patterns as Dynamic Spatiotemporal Clusters and Rules in a Brain-Inspired Spiking Neural Network https://www.mdpi.com/1424-8220/21/14/4900

https://www.resonancescience.org/blog/Neurons-Act-Not-As-Simple-Logic-Gates-But-As-Complex-Multi-Unit-Processing-Systems?fbclid=IwAR3zN62-UXvSO4FwuDbP5H1S-IJLi87oF3D-9deKWu94TxCVK2DjBBlJvRs

Navigating the pitfalls of applying machine learning in genomics https://www.nature.com/articles/s41576-021-00434-9?utm\_source=facebook&utm\_medium=social&utm\_content=organic&utm\_campaign=NGMT\_USG\_JC01\_GL\_NRJournals&fbclid=IwAR1ezpELYBadJpxV9U886bDd8ts8Yq8cXclorwRPFoECa-PrQSaCv1mRMe4

DNN

A pytorch module to implement Bayesian neural networks with variational inference.

<https://github.com/giacomodeodato/vinn>

A Short Introduction to Bayesian Neural Networks <https://davidstutz.de/a-short-introduction-to-bayesian-neural-networks/>

<https://www.cs.toronto.edu/~rgrosse/courses/csc421_2019/slides/lec19.pdf> BayesNN

https://cedar.buffalo.edu/~srihari/CSE574/Chap5/Chap5.7-BayesianNeuralNetworks.pdf

What Are Bayesian Neural Network Posteriors Really Like? https://arxiv.org/pdf/2104.14421.pdf

<https://ai.facebook.com/blog/building-ai-that-can-understand-variation-in-the-world-around-us>

ADDRESSING THE TOPOLOGICAL DEFECTS OF DISEN- TANGLEMENT VIA DISTRIBUTED OPERATORS <https://arxiv.org/pdf/2102.05623.pdf?fbclid=IwAR2Y64gV29oBWqxlZvMy2UpY3-Fy1HVH-N5sK1tAqjmyK67YE_-raY7C45o>

A Gentle Introduction to Graph Neural Networks https://distill.pub/2021/gnn-intro/

Courses

Hands-on scientific computing <https://plus.cs.aalto.fi/CS-E4004/2020/>

<https://fitech.io/en/studies/hands-on-scientific-computing/>

ISLR <https://www.dataschool.io/15-hours-of-expert-machine-learning-videos/>

<https://www.statlearning.com>

Open Uni, Foundations of Discrete Mathematics, spring 2022, 5 ECTS cr Application period begins 31.1.2022 at 09:00 <https://studyinfo.fi/app/#!/koulutus/1.2.246.562.17.12911414634>

https://www.aalto.fi/en/open-university-course-list#/?topic=Neuroscience,Computer%20Science,Mathematics&registrationStatus=open,coming&courseLanguage=en

Readings/ Materials

"The Little Green Books" https://us.sagepub.com/en-us/nam/qass

Helsinki Machine Learning Project Template <https://city-of-helsinki.github.io/ml_project_template/#1.-Prefer-Standard-Tools>

The Malicious Use of Artificial Intelligence: Forecasting, Prevention, and Mitigation <https://arxiv.org/pdf/1802.07228.pdf>

https://xcelab.net/rm/statistical-rethinking/

Stats

<https://www.r-bloggers.com/2021/04/repeated-measures-of-anova-in-r-complete-tutorial/>

<https://www.r-bloggers.com/2018/04/how-to-do-repeated-measures-anovas-in-r/>

<https://www.inovex.de/de/blog/bayesian-hierarchical-modelling-at-scale/> PyMC

MCMSeq: Bayesian hierarchical modeling of clustered and repeated measures RNA sequencing experiments <https://bmcbioinformatics.biomedcentral.com/articles/10.1186/s12859-020-03715-y>

<https://www.researchgate.net/publication/316942094/figure/fig3/AS:559703663050753@1510455160376/Graphical-representation-of-the-model-Hierarchical-Bayesian-models-yield-parameter.png>

<https://bookdown.org/marklhc/notes_bookdown/hierarchical-multilevel-models.html>

<https://www.boelstad.net/post/bayesian_hierarchical_modeling/>

<https://rpubs.com/cakapourani/variational-bayes-lr>

<https://www.r-bloggers.com/2019/10/a-brief-primer-on-variational-inference/>

<https://stackoverflow.com/questions/57186920/rstan-gives-different-results-in-exact-and-variational-bayes-modes>

<https://towardsdatascience.com/bayesian-inference-problem-mcmc-and-variational-inference-25a8aa9bce29>

<https://m-clark.github.io/mixed-models-with-R/bayesian.html>

<https://twiecki.io/blog/2014/03/17/bayesian-glms-3/>

<https://ourcodingclub.github.io/tutorials/mixed-models/>

<https://cran.r-project.org/web/packages/lme4/vignettes/lmer.pdf>

http://www.stat.rutgers.edu/home/yhung/Stat586/Mixed%20model/appendix-mixed-models.pdf

Teaching

<https://thehackweekly.com/8-most-popular-types-of-activation-functions-in-neural-networks/>

<https://nbviewer.org/github/rasbt/python-machine-learning-book/blob/master/code/ch02/ch02.ipynb>

<https://www.nature.com/articles/d41586-021-01485-y?utm_medium=Social&utm_campaign=nature&utm_source=Facebook&fbclid=IwAR2bdXdE9wu1Qs6xIMzaTukU_2QsAGSsobZWkH3g7rJO5sxtdXqkVYGvrFc#Echobox=1639949563> cartoons