

## Appendix 1

### PubMed search strategy

Draft for the search strategy for systematic review of the reporting of the development and validation of machine learning models using Pubmed interface.

Search date: 19 November 2019

1. Machine Learning[MeSH Terms]
2. Deep learning[MeSH Terms]
3. supervised machine learning[MeSH Terms]
4. "Neural Networks, Computer"[Mesh]
5. data mining[MeSH Terms]
6. machine[tiab] AND (learn\* OR model\*)
7. (statistical[tiab] OR "statistical-learning"[tiab]) AND ( strateg\*[tiab])
8. multilayer perceptron\*[tiab] OR random forest\*[tiab] OR bayes\* network\*[tiab] OR support vector machine\*[tiab] OR nearest neighbor\*[tiab] OR k nearest neighbor\*[tiab] OR elastic net[tiab] OR naive bayes\*[tiab]
9. (classification[tiab] OR regression[tiab] OR estimation[tiab] OR decision[tiab]) AND tree[tiab]
10. ridge[tiab] OR kernel[tiab] OR ensemble[tiab] OR bagging[tiab] OR bagged[tiab] OR boosting[tiab] OR boosted[tiab] OR fuzzy[tiab]
11. #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10

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12. (Validat\* OR Predict\* OR Rule\*). [tiab]
13. (Predict\* AND (Outcome\* OR Risk\* OR Model\*). [tiab]
14. ((History OR Variable\* OR Criteria OR Scor\* OR Characteristic\* OR Finding\* OR Factor\*) AND (Predict\* OR Model\* OR Decision\* OR Identif\* OR Prognos\*)). [tiab]
15. (Decision\* AND (Model\* OR Clinical\*). [tiab]
16. (Prognostic AND (History OR Variable\* OR Criteria OR Scor\* OR Characteristic\* OR Finding\* OR Factor\* OR Model\*). [tiab]
17. #12 OR #13 OR #14 OR #15 OR #16

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18. (discrimination[tiab] OR discriminative[tiab] OR discriminatory[tiab]) AND (accuracy[tiab] OR ability[tiab] OR performance[tiab] OR value[tiab] OR model[tiab] OR models[tiab] OR power[tiab] OR capacity[tiab] OR capabilit\*[tiab] OR efficiency[tiab])

19. (discriminability[tiab] OR c-index[tiab] OR c-statistic[tiab] OR concordance[tiab] OR DCA[tiab])
  20. "decision curve"[tiab]
  21. calibrat\*[tiab] AND (plot\*[tiab] OR curve\*[tiab] OR slope\*[tiab] OR model[tiab] OR models[tiab])
  22. performance[tiab] AND (classification[tiab] OR classifier[tiab] OR clinical[tiab] OR accuracy[tiab] OR validation[tiab] OR metrics[tiab] OR diagnostic[tiab] OR AUC[tiab])
  23. (sensitivity[tiab] OR specificity[tiab] OR PPV[tiab] OR NPV[tiab])
  24. "correctly classified"[tiab]
  25. "clinical accuracy"[tiab]
  26. positive predictive value\*[tiab]
  27. negative predictive value\*[tiab]
  28. classification[tiab] OR classifier[tiab]
  29. Area Under Curve[Mesh]
  30. "Area under the curve"[tiab]
  31. "Area under the ROC"[tiab]
  32. "Area Under the Receiver"[tiab]
  33. (ROC[tiab] OR AUC[tiab] OR AUROC[tiab])
  34. ROC Curve [Mesh]
  35. "Hosmer-Lemeshow"[tiab] OR "H-L test"[tiab]
  36. "expected ratio"[tiab] OR "observed ratio"[tiab] OR "E:O ratio"[tiab]
  37. #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36
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38. #11 AND #17
  39. #11 AND (#17 OR #37)
  40. #39 AND ("2018/01/01"[PDat]: "2019/12/31"[PDat])
  41. #40 NOT "review"[pt]
  42. #39 AND ("2019/01/01"[PDat]: "2019/12/31"[PDat])
  43. #42 NOT "review"[pt]

Results #41= **24732**

Results #43=**12977**