

REFERENCES

- Akata, Z., Geiger, A. and Sattler, T., 2021. Computer Vision and Pattern Recognition 2020. *International Journal of Computer Vision*, 129(12), pp.3169–3170. Available at: <http://www.eng.usf.edu/cvprg/> [Accessed April 13, 2022].
- Alaa M Elsayad, 2010. Diagnosis of erythemato-squamous diseases using ensemble of data mining methods. *ICGST-BIME Journal*, 10(1), pp.13–23. Available at: <https://promise12.grand-challenge.org/Details/> [Accessed April 13, 2022].
- Ali, A., Shamsuddin, S.M. and Ralescu, A.L., 2015. Classification with class imbalance problem: A review. *International Journal of Advances in Soft Computing and its Applications*, 7(3), pp.176–204.
- Ali, J., Khan, R., Ahmad, N. and Maqsood, I., 2012. Random Forests and Decision Trees. *International Journal of Computer Science Issues*, 9(5), pp.272–278.
- Alrefai, N., 2019. Ensemble Machine Learning for Leukemia Cancer Diagnosis based on Microarray Datasets. *International Journal of Applied Engineering Research*, 14(21), pp.4077–4084. Available at: <http://www.ripublication.com>.
- American Cancer Society |AICR, 2019. Facts & Figures 2019. *American Cancer Society*, pp.1–76. Available at: <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2019/cancer-facts-and-figures-2019.pdf>.
- An Extensively Curated Microarray Database, 2019. SBCB Lab. *Curated Microarray Database (CuMiDa)*,. Available at: <https://sbcbl.inf.ufrgs.br/cumida> [Accessed April 13, 2022].
- Ancona, N., Maglietta, R., Piepoli, A., D’Addabbo, A., Cotugno, R., Savino, M., Liuni, S., Carella, M., Pesole, G. and Perri, F., 2006. On the statistical assessment of classifiers using DNA microarray data. *BMC Bioinformatics*, 7, pp.1–14.
- Armañanzas, R., Calvo, B., Inza, I., López-Hoyos, M., Martiánez-Taboada, V., Ucar, E., Bernales, I., Fullaondo, A., Larrañaga, P. and Zubiaga, A.M., 2009. Microarray analysis of autoimmune diseases by machine learning procedures. *IEEE Transactions on Information Technology in Biomedicine*, 13(3), pp.341–350.
- Armato III, SG; McLennan, G; Bidaut, L; McNitt-Gray, MF; Meyer, CR; Reeves, AP; Zhao, B; Aberle, DR; Henschke, CI; Hoffman, Eric A; Kazerooni, EA; MacMahon, H; van Beek, EJ; Yankelevitz, D; Biancardi, AM; Bland, PH; Brown, MS; Engelmann, RM; Laderach, GE, L., 2015. Data From LIDC-IDRI. *The Cancer Imaging Archive (TCIA) Public Access*. Available at: <https://wiki.cancerimagingarchive.net/display/Public/LIDC-IDRI> [Accessed April 13, 2022].
- Assiri, A.S., Nazir, S. and Velastin, S.A., 2020. Breast Tumor Classification Using an Ensemble Machine Learning Method. *Journal of Imaging*, 6(6).
- Awada, H., Durmaz, A., Gurnari, C., Kishtagari, A., Meggendorfer, M., Kerr, C.M., Kuzmanovic, T., Durrani, J., Shreve, J., Nagata, Y., Radivoyevitch, T., Advani, A.S., Ravandi, F., Carraway, H.E., Nazha, A., Haferlach, C., Sauntharajah, Y., Scott, J., Visconte, V., Kantarjian, H., Kadia, T., Sekeres, M.A., Haferlach, T. and Maciejewski, J.P., 2021. Machine learning integrates genomic signatures for

- subclassification beyond primary and secondary acute myeloid leukemia. *Blood*, 138(19), pp.1885–1895.
- Awan, F.M., Saleem, Y., Minerva, R. and Crespi, N., 2020. A comparative analysis of machine/deep learning models for parking space availability prediction. *Sensors (Switzerland)*, 20(1).
- Ba-alwi, F.M. and Hintaya, H.M., 2013. Comparative Study for Analysis the Prognostic in Hepatitis Data: Data Mining Approach. *International Journal of Scientific & Engineering Research*, 4(8), pp.680–685.
- Barwal, R.K., Raheja, N. and Kumar, P., 2022. Voting Classification Approach for Breast Cancer Detection. , pp.663–673. Available at: https://link.springer.com/chapter/10.1007/978-981-16-8774-7_55 [Accessed April 10, 2022].
- Bauer, E. and Kohavi, R., 1998. An Empirical Comparison of Voting Classification Algorithms. *Machine Learning*, 38(1998), pp.1–38. Available at: <papers://5e3e5e59-48a2-47c1-b6b1-a778137d3ec1/Paper/p7>.
- Beam, A.L. and Kohane, I.S., 2018. Big data and machine learning in health care. *JAMA - Journal of the American Medical Association*, 319(13), pp.1317–1318.
- Bellaachia., A. and Guven, E., 2012. Predicting breast cancer survivability using data mining techniques. *ICSTE 2010 - 2010 2nd International Conference on Software Technology and Engineering, Proceedings*, 2, pp.227–231.
- Biau, G. and Scornet, E., 2016. A random forest guided tour. *Test*, 25(2), pp.197–227.
- BioGPS, 2022. Dermis Datasets | BioGPS. *gene annotation portal*. Available at: <http://biogps.org/dataset/tag/dermis/> [Accessed April 13, 2022].
- Bonet-Carne, E., Grussu, F., Ning, L., Sepehrband, F. and Tax, C., 2018. Multi-shell Diffusion MRI Harmonisation Challenge. *MUSHAC*. Available at: <https://projects.iq.harvard.edu/cdmri2018/data> [Accessed April 13, 2022].
- Borovec, J., Kybic, J., Arganda-Carreras, I., Sorokin, D. V., Bueno, G., Khvostikov, A. V., Bakas, S., Chang, E.I.C., Heldmann, S., Kartasalo, K., Latonen, L., Lotz, J., Noga, M., Pati, S., Punithakumar, K., Ruusuvaori, P., Skalski, A., Tahmasebi, N., Valkonen, M., Venet, L., Wang, Y., Weiss, N., Wodzinski, M., Xiang, Y., Xu, Y., Yan, Y., Yushkevich, P., Zhao, S. and Munõz-Barrutia, A., 2020. ANHIR: Automatic Non-Rigid Histological Image Registration Challenge. *IEEE Transactions on Medical Imaging*, 39(10), pp.3042–3052.
- Bouguot, B., 2009. Differential diagnosis of oral and maxillofacial disease in Oral and Maxillofacial Pathology, *Angewandte Chemie International Editions*, 6(110), pp.951-952.
- Boyd, C.R., Tolson, M.A. and Copes, W.S., 1987. Evaluating trauma care: The TRISS method. *Journal of Trauma - Injury, Infection and Critical Care*, 27(4), pp.370–378. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/3106646>.
- Breiman, L., 1996. Bagging predictions. *Machine Learning*, 24(2), pp.123–140.
- Breiman, L., 2001. Random Forests. *University of California, Berkeley*, 45, pp.5–32.
- Brownlee, J., 2021. A Gentle Introduction to Learning Algorithms. *Machine Learning Mastery*. Available at: <https://machinelearningmastery.com/tour-of-ensemble-learning-algorithms/> [Accessed April 22, 2022].
- Bull, L., 2004. Learning Classifier Systems: A Brief Introduction. , pp.1–12.

- C4KC, 2019. Climb 4 Kidney Cancer (C4KC). *Climb 4 Kidney Cancer*. Available at: <https://kits19.grand-challenge.org/data/> [Accessed April 13, 2022].
- Castillo, D., Galvez, J.M., Herrera, L.J., Rojas, F., Valenzuela, O., Caba, O., Prados, J. and Rojas, I., 2019. Leukemia multiclass assessment and classification from Microarray and RNA-seq technologies integration at gene expression level. *PLoS ONE*, 14(2), pp.1–25.
- Catal, C. and Nangir, M., 2017. A sentiment classification model based on multiple classifiers. *Applied Soft Computing Journal*, 50, pp.135–141. Available at: <http://dx.doi.org/10.1016/j.asoc.2016.11.022>.
- Chandrasekar, R.M., 2013. Performance and Evaluation of Data Mining Techniques in Cancer Diagnosis. *IOSR Journal of Computer Engineering*, 15(5), pp.39–44.
- CHAOS, 2019. Abdominal CT and MRI (T1 and T2 weighted). *Abdominal CT and MRI*. Available at: <https://chaos.grand-challenge.org/Data/> [Accessed April 13, 2022].
- Chapla, U., 2015. Leukemia – Brief Review on Recent Advancements in Therapy and Management. *Asian Journal of Research in Pharmaceutical Sciences and Biotechnology*. 3. 12-26., 3(August), pp.12–26.
- Chawla, N. V., Bowyer, K.W., Hall, L.O. and Kegelmeyer, W.P., 2002. snopes.com: Two-Striped Telamonia Spider. *Journal of Artificial Intelligence Research*, 16(Sept. 28), pp.321–357. Available at: <https://arxiv.org/pdf/1106.1813.pdf%0Ahttp://www.snopes.com/horrors/insects/telamonia.asp>.
- Chen, M. and Decary, M., 2020. Artificial intelligence in healthcare: An essential guide for health leaders. *Healthcare Management Forum*, 33(1), pp.10–18.
- Claro, M., Vogado, L., Veras, R., Santana, A., Tavares, J., Santos, J. and MacHado, V., 2020. Convolution Neural Network Models for Acute Leukemia Diagnosis. *International Conference on Systems, Signals, and Image Processing*, 2020-July, pp.63–68.
- Claro, M., Vogado, L., Veras, R., Santana, A., Tavares, J., Santos, J. and MacHado, V., 2020. Convolution Neural Network Models for Acute Leukemia Diagnosis. *International Conference on Systems, Signals, and Image Processing*, 2020-July(July), pp.63–68.
- Colditz, G.A., 2015. American Society of Hematology. In *The SAGE Encyclopedia of Cancer and Society*. Available at: <https://www.hematology.org/> [Accessed April 7, 2022].
- Coustan-Smith, E., Song, G., Clark, C., Key, L., Liu, P., Mehrpooya, M., Stow, P., Su, X., Shurtleff, S., Pui, C.-H., Downing, J.R. and Campana, D., 2018. New markers for minimal residual disease detection in acute lymphoblastic leukemia. *Nature*, 388, pp.6267–76.
- Das, P.K. et al., 2021. A survey on data mining approaches for healthcare. *Journal of Chemical Information and Computer Sciences*, 24(2), pp.1–12. Available at: <http://www.ripublication.com> [Accessed December 4, 2021].
- Das, P.K., Jadoun, P. and Meher, S., 2020. Detection and Classification of Acute Lymphocytic Leukemia. *Proceedings of 2020 IEEE-HYDCON International Conference on Engineering in the 4th Industrial Revolution, HYDCON 2020*.

- Das, P.K. and Meher, S., 2021. An efficient deep Convolutional Neural Network based detection and classification of Acute Lymphoblastic Leukemia. *Expert Systems with Applications*, 183(April), p.115311. Available at: <https://doi.org/10.1016/j.eswa.2021.115311>.
- Dasariraju, S., Huo, M. and McCalla, S., 2020. Detection and classification of immature leukocytes for diagnosis of acute myeloid leukemia using random forest algorithm. *Bioengineering*, 7(4), pp.1–12.
- Dataset, G.C., 2020. Dataset - Grand Challenge. *Miltos*. Available at: <https://mitos-atypia-14.grand-challenge.org/dataset/> [Accessed April 13, 2022].
- Deb, K. and Raji Reddy, A., 2003. Reliable classification of two-class cancer data using evolutionary algorithms. *BioSystems*, 72(1–2), pp.111–129.
- Deif, M.A., Hammam, R.E. and Solyman, A.A.A., 2021. Gradient Boosting Machine Based on PSO for prediction of Leukemia after a Breast Cancer Diagnosis. *International Journal on Advanced Science, Engineering and Information Technology*, 11(2), pp.508–515.
- Dey, U.K. and Islam, M.S., 2019. Genetic Expression Analysis to Detect Type of Leukemia Using Machine Learning. In *1st International Conference on Advances in Science, Engineering and Robotics Technology 2019, ICASERT 2019*. IEEE, pp. 1–6.
- Du, X.F., Leung, S.C.H., Zhang, J.L. and Lai, K.K., 2013. Demand forecasting of perishable farm products using support vector machine. *International Journal of Systems Science*, 44(3), pp.556–567.
- Durgesh K. Srivastava, L.B., 2010. Data Classification Using Support Vector Machine. *Journal of Theoretical and Applied Information Technology*, 1, pp.3–6.
- Eckardt, J.N., Wendt, K., Bornhäuser, M. and Middeke, J.M., 2021. Reinforcement learning for precision oncology. *Cancers*, 13(18).
- Ehrenstein, V., Nielsen, H., Pedersen, A.B., Johnsen, S.P. and Pedersen, L., 2017. Clinical epidemiology in the era of big data: New opportunities, familiar challenges. *Clinical Epidemiology*, 9, pp.245–250.
- Eid, M.M.A., Rashed, A.N.Z., Bulbul, A.A.M. and Podder, E., 2021. Mono-Rectangular Core Photonic Crystal Fiber (MRC-PCF) for Skin and Blood Cancer Detection. *Plasmonics*, 16(3), pp.717–727.
- El-Nasser, A.A., Shaheen, M. and El-Deeb, H., 2014. Enhanced leukemia cancer classifier algorithm. *Proceedings of 2014 Science and Information Conference, SAI 2014*, pp.422–429.
- Elsayad, A., 2010. Diagnosis of erythemato-squamous diseases using ensemble of data mining methods. *Icgst-Bime Journal*, 10(15), pp.1-10..
- English, M., Kumar, C., Ditterline, B.L., Drazin, D. and Dietz, N., 2022. Machine Learning in Neuro-Oncology, Epilepsy, Alzheimer's Disease, and Schizophrenia. In *Acta Neurochirurgica, Supplementum*. Springer, Cham, pp. 349–361. Available at: https://link.springer.com/chapter/10.1007/978-3-030-85292-4_39 [Accessed April 7, 2022].
- Esmail, F.S., Senousy, M.B. and Ragaie, M., 2016. Predication Model for Leukemia Diseases Based on Data Mining Classification Algorithms with Best Accuracy. ,

- 10(5), pp.800–809.
- Esteva, A., Kuprel, B., Novoa, R.A., Ko, J., Swetter, S.M., Blau, H.M. and Thrun, S., 2017. Dermatologist-level classification of skin cancer with deep neural networks. *Nature*, 542(7639), pp.115–118.
- Expression, G.&, 2020. Genes & Expression - Site Guide - NCBI. *National Library of Medicine*. Available at: <https://www.ncbi.nlm.nih.gov/guide/genes-expression/> [Accessed April 13, 2022].
- Faizan Ansari, 2021. Cross-Validation Techniques. *Analytics Vidhya*. Available at: <https://medium.com/analytics-vidhya/cross-validation-techniques-bacb582097bc> [Accessed May 1, 2022].
- Fauzi, I.R., Rustam, Z. and Wibowo, A., 2021. Multiclass classification of leukemia cancer data using Fuzzy Support Vector Machine (FSVM) with feature selection using Principal Component Analysis (PCA). *Journal of Physics: Conference Series*, 1725(1).
- FDA, 2018. Digital Health Criteria. *FDA Digital Health Center of Excellence*, pp.1–4. Available at: <https://www.fda.gov/medical-devices/digital-health-center-excellence/digital-health-criteria> [Accessed April 8, 2022].
- Feltes, B.C., Chandelier, E.B., Grisci, B.I. and Dorn, M., 2019. CuMiDa: An Extensively Curated Microarray Database for Benchmarking and Testing of Machine Learning Approaches in Cancer Research. *Journal of Computational Biology*, 26(4), pp.376–386.
- Garcia Adeva, J.J., Cervino Beresi, U. and Calvo, R.A., 2005. Accuracy and Diversity in Ensembles of Text Categorisers. *CLEI Electronic Journal*, 8(2), pp.1–12.
- Ghaderzadeh, M., Fein, R. and Standring, A., 2013. Comparing Performance of Different Neural Networks for Early Detection of Cancer from Benign Hyperplasia of Prostate. *Applied Medical Informatics*, 33(3), pp.45–54.
- Ghaznavi, F., Evans, A., Madabhushi, A. and Feldman, M., 2013. Digital imaging in pathology: Whole-slide imaging and beyond. *Annual Review of Pathology: Mechanisms of Disease*, 8(October), pp.331–359.
- Giotis, I., Molders N, Land, S., Biehl, M., Jonkman, M. and Petkov, N., 2015. Dermatology database used in MED-NODE. Available at: https://www.cs.rug.nl/imaging/databases/melanoma_naevi/ [Accessed April 13, 2022].
- Goutam, D., 2015. Classification of Acute Myelogenous Leukemia in Blood Microscopic Images using Supervised Classifier. *2015 IEEE International Conference on Engineering and Technology (ICETECH)*, (March), pp.1–5.
- Grisci, B., 2019. Leukemia gene expression - CuMiDa. *CuMiDa*. Available at: <https://www.kaggle.com/datasets/brunogrisci/leukemia-gene-expression-cumida> [Accessed April 13, 2022].
- Gumble, P.M. and Rode, S.V., 2017. Analysis & Classification of Acute Lymphoblastic Leukemia using KNN Algorithm. *International Journal on Recent and Innovation Trends in Computing and Communication*, 5(2), pp.94–98.
- Guo, Z., Xu, L. and Ali Asgharzadeholiaee, N., 2022. A Homogeneous Ensemble Classifier for Breast Cancer Detection Using Parameters Tuning of MLP Neural

- Network. *Applied Artificial Intelligence*, 00(00), pp.1–21. Available at: <https://doi.org/10.1080/08839514.2022.2031820>.
- Gupta, P. and Malhi, A.K., 2018. Using deep learning to enhance head and neck cancer diagnosis and classification. *2018 IEEE International Conference on System, Computation, Automation and Networking, ICSCA 2018*, pp.1–6.
- Harrison, J.S., Desmarteau, P. and Patthoff, S., 2019. Leukemia and Lymphoma Society. *The Grants Register 2019*, pp.468–468.
- Heba Hakh, Ibrahim Aljarah, B.A.-S., 2017. Online Social Media-based Sentiment Analysis for US Airline companies Online Social Media-based Sentiment Analysis for US Airline companies. *Proceedings of the New Trends in Information Technology*, (April), pp.176–181.
- Hegde, R.B., Prasad, K., Hebbar, H., Singh, B.M.K. and Sandhya, I., 2020. Automated Decision Support System for Detection of Leukemia from Peripheral Blood Smear Images. *Journal of Digital Imaging*, 33(2), pp.361–374.
- Hossain, M.A., Sabik, M.I., Rahman, M.M., Sakiba, S.N., Muzahidul Islam, A.K.M., Shatabda, S., Islam, S. and Ahmed, A., 2021. An effective leukemia prediction technique using supervised machine learning classification algorithm. In *Advances in Intelligent Systems and Computing*. Springer, Singapore, pp. 219–229. Available at: https://link.springer.com/chapter/10.1007/978-981-33-4673-4_19 [Accessed December 4, 2021].
- Hossain, M.A., Sabik, M.I., Rahman, M.M., Sakiba, S.N., Muzahidul Islam, A.K.M., Shatabda, S., Islam, S. and Ahmed, A., 2021. An Effective Leukemia Prediction Technique Using Supervised Machine Learning Classification Algorithm. *Advances in Intelligent Systems and Computing*, 1309, pp.219–229. Available at: https://link.springer.com/chapter/10.1007/978-981-33-4673-4_19 [Accessed December 4, 2021].
- Jiang, F., Jiang, Y., Zhi, H., Dong, Y., Li, H., Ma, S., Wang, Yilong, Dong, Q., Shen, H. and Wang, Yongjun, 2017. Artificial intelligence in healthcare: Past, present and future. *Stroke and Vascular Neurology*, 2(4), pp.230–243.
- Jones, W., Alasoo, K., Fishman, D. and Parts, L., 2017. Computational biology: Deep learning. *Emerging Topics in Life Sciences*, 1(3), pp.257–274.
- Joshi, S., Arindom, R., Dikshit, T., Anish, B., Deep, A.G. and Pallav, P., 2015. Conceptual paper on factors affecting the attitude of senior citizens towards purchase of smartphones. *Indian Journal of Science and Technology*, 8(12), pp.83–89.
- Kaggle, 2019. Histopathologic Cancer Detection | Kaggle. *Kaggle*. Available at: <https://www.kaggle.com/c/histopathologic-cancer-detection/data> [Accessed April 13, 2022].
- Kandil, A.H. and A., O., 2016. Automatic Segmentation of Acute Leukemia Cells. *International Journal of Computer Applications*, 133(10), pp.1–8.
- Karim, A., Azhari, A., Belhaouri, S.B., Qureshi, A.A. and Ahmad, M., 2020. Methodology for analyzing the traditional algorithms performance of user reviews using machine learning techniques. *Algorithms*, 13(8).
- Kaur, R., 2021. Naive Bayes: A Text Classifier based on Machine Learning. *International Journal of Research Publication and Reviews*, (2), pp.260–266. Available at: <https://ijrpr.com/uploads/V2ISSUE2/IJRPR194.pdf> [Accessed

May 4, 2022].

- Kekre, H.B., Sarode, T.K. and Raul, B., 2009. Color Image Segmentation using Vector Quantization Techniques Based on the Energy Ordering concept. , 1(2), pp.164–171.
- Khuriwal, N. and Mishra, N., 2018. Breast Cancer Diagnosis Using Deep Learning Algorithm. *Proceedings - IEEE 2018 International Conference on Advances in Computing, Communication Control and Networking, ICACCCN 2018*, pp.98–103.
- Kononenko, S., 2005. Noctuidae sibiricae, *Entomological Press*, Vol 1, pp.7-219.
- Kotsiantis, S.B. and Pintelas, P.E., 2004. An Online Ensemble of Classifiers. , pp.59–68.
- Kourou, K., Exarchos, T.P., Exarchos, K.P., Karamouzis, M. V. and Fotiadis, D.I., 2015. Machine learning applications in cancer prognosis and prediction. *Computational and Structural Biotechnology Journal*, 13, pp.8–17. Available at: <http://dx.doi.org/10.1016/j.csbj.2014.11.005>.
- Kumar, S., Mishra, S., Asthana, P. and Pragya, 2018. Automated detection of acute leukemia using K-mean clustering algorithm. *Advances in Intelligent Systems and Computing*, 554, pp.655–670.
- Kumar, U.K., Nikhil, M.B.S. and Sumangali, K., 2017. Prediction of breast cancer using voting classifier technique. *2017 IEEE International Conference on Smart Technologies and Management for Computing, Communication, Controls, Energy and Materials, ICSTM 2017 - Proceedings*, (August), pp.108–114.
- Kurbatova, P., Bernard, S., Bessonov, N., Crauste, F., Demin, I., Dumontet, C., Fischer, S. and Volpert, V., 2011. Hybrid model of erythropoiesis and leukemia treatment with cytosine arabinoside. *SIAM Journal on Applied Mathematics*, 71(6), pp.2246–2268.
- Lab, V., 2008. A Methodology for Breast Disease Computer-Aided Diagnosis. *IC/UFF*. Available at: <http://visual.ic.uff.br/en/proeng/thiagoelias/> [Accessed April 13, 2022].
- Laosai, J. and Chamnongthai, K., 2014. Acute leukemia classification by using SVM and K-Means clustering. *2014 International Electrical Engineering Congress, iEECON 2014*, pp.1–4.
- Li, Y. and Luo, Y., 2020. Performance-weighted-voting model: an ensemble machine learning method for cancer type classification using whole-exome sequencing mutation. *Quantitative Biology*, 8(4), pp.347–358.
- Libbrecht, M.W. and Noble, W.S., 2015. Machine learning in genetics and genomics. *Nature Review Genetics*, 16(6), pp.321–332.
- Lightfoot, T., Smith, A. and Roman, E., 2021. Leukemia. *International Encyclopedia of Public Health*, pp.410–418. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK560490/> [Accessed April 9, 2022].
- Liu, Y.Q., Wang, C. and Zhang, L., 2009. Decision tree based predictive models for breast cancer survivability on imbalanced data. In *3rd International Conference on Bioinformatics and Biomedical Engineering, iCBBE 2009*. IEEE, pp. 13–16.
- Loey, M., Naman, M. and Zayed, H., 2020. Deep transfer learning in diagnosing leukemia in blood cells. *Computers*, 9(2).

- Lynch, C.J. and Liston, C., 2018. New machine-learning technologies for computer-aided diagnosis. , 24(September), pp.1304–1305.
- Madhukar, M., Agaian, S. and Chronopoulos, A.T., 2012. Deterministic model for Acute Myelogenous Leukemia classification. *Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics*, pp.433–438.
- Mahdi, G.J.M., Kalaf, B.A. and Khaleel, M.A., 2021. Enhanced supervised principal component analysis for cancer classification. *Iraqi Journal of Science*, 62(4), pp.1321–1333. Available at: <https://ijs.uobaghdad.edu.iq/index.php/eijs/article/view/3389> [Accessed December 4, 2021].
- Miltos, 2022. Cohort Liver cancer segmentation Dataset - Grand Challenge. *Grand Challenges Dataset*. Available at: <https://paip2019.grand-challenge.org/Dataset/> [Accessed April 13, 2022].
- Ministry of the Interior and Health, D., Danish Lung Cancer Screening Trial (DLCST) (DLCST). Available at: <https://clinicaltrials.gov/ct2/show/NCT00496977> [Accessed April 13, 2022].
- MNT, 2020. Cancer: Overview, causes, treatments, and types. *Medical News Today*, (January), pp.1–2. Available at: <https://www.medicalnewstoday.com/articles/323648> [Accessed January 7, 2022].
- Mohd, F., Noor, N.M.M., Abu Bakar, Z. and Rajion, Z.A., 2015. Analysis of Oral Cancer Prediction using Features Selection with Machine Learning., *International Conference on Information Technology ICIT 7*(6), pp.383–388.
- Montazeri, Mahdieh, Montazeri, Mitra, Montazeri, Mohadeseh and Beigzadeh, A., 2016. Machine learning models in breast cancer survival prediction. *Technology and Health Care*, 24(1), pp.31–42.
- Moradiamin, M., Samadzadehaghdam, N., Kermani, S. and Talebi, A., 2015. Enhanced Recognition of Acute Lymphoblastic Leukemia Cells in Microscopic Images based on Feature Reduction using Principle Component Analysis. *Frontiers In Biomedical Technologies*, 2(3), pp.128–136.
- Morovvat, M. and Osareh, A., 2016. An Ensemble of Filters and Wrappers for Microarray Data Classification. *Machine Learning and Applications: An International Journal*, 3(2), pp.01–17.
- Mujahid, M., Lee, E., Rustam, F., Washington, P.B., Ullah, S., Reshi, A.A. and Ashraf, I., 2021. Sentiment analysis and topic modeling on tweets about online education during covid-19. *Applied Sciences (Switzerland)*, 11(18).
- Murphy, K., 2014. Machine Learning Naive Bayes classifiers. *Machine Learning*, pp.1–17.
- Naji, M.A., Filali, S. El, Bouhlal, M., Benlahmar, E.H., Abdelouhahid, R.A. and Debauche, O., 2021. Breast Cancer Prediction and Diagnosis through a New Approach based on Majority Voting Ensemble Classifier. *Procedia Computer Science*, 191, pp.481–486. Available at: <https://doi.org/10.1016/j.procs.2021.07.061>.
- Nall, R., 2018. Cancer: Overview, causes, treatments, and types. *Medical News Today*.

- Natekin, A. and Knoll, A., 2013. Gradient boosting machines, a tutorial. *Frontiers in Neurorobotics*, 7(DEC).
- Nazari, E., Farzin, A.H., Aghemiri, M., Avan, A., Tara, M. and Tabesh, H., 2020. Deep Learning for Acute Myeloid Leukemia Diagnosis. *Journal of medicine and life*, 13(3), pp.382–387.
- NDA, 2018. NIMH Data Archive - Data - Collection. *Adolescent Brain Cognitive Development*. Available at: https://nda.nih.gov/edit_collection.html?id=3104 [Accessed April 13, 2022].
- Negi, R. and Mathew, R., 2020. Machine Learning Algorithms for Diagnosis of Breast Cancer. In *Lecture Notes on Data Engineering and Communications Technologies*. pp. 928–932. Available at: https://www.researchgate.net/profile/Italia-Joseph-Maria/publication/339551705_Machine_Learning_Algorithms_For_Diagnosis_Of_Leukemia/links/5e760a78299bf1892cfc8759/Machine-Learning-Algorithms-For-Diagnosis-Of-Leukemia [Accessed January 7, 2022].
- Obermeyer, Z. and Emanuel, E.J., 2016. Predicting the Future — Big Data, Machine Learning, and Clinical Medicine. *The New England journal of medicine*, 375(13), p.1216. Available at: </pmc/articles/PMC5070532/> [Accessed April 7, 2022].
- Odegua, R.O., 2020. An Empirical Study of Ensemble Techniques (Bagging, Boosting and Stacking). *Deep Learning IndabaX*, 12(10), p.1683.
- Oostindjer, M., Alexander, J., Amdam, G.V., Andersen, G., Bryan, N.S., Chen, D., Corpet, D.E., De Smet, S., Dragsted, L.O., Haug, A., Karlsson, A.H., Kleter, G., de Kok, T.M., Kulseng, B., Milkowski, A.L., Martin, R.J., Pajari, A.M., Paulsen, J.E., Pickova, J., Rudi, K., Sødrring, M., Weed, D.L. and Egelanddsal, B., 2014. The role of red and processed meat in colorectal cancer development: A perspective. *Meat Science*, 97(4), pp.583–596. Available at: <http://dx.doi.org/10.1016/j.meatsci.2014.02.011>.
- Oprea, C. and Ti, P. Ş, 2014. Performance Evaluation of the Data Mining Classification Methods. *Analele Universităţii Constantin Brâncuşi din Târgu Jiu : Seria Economie*, 1(Special number-Information society and sustainable development), pp.249–253.
- Osamor, V.C. and Okezie, A.F., 2021. Enhancing the weighted voting ensemble algorithm for tuberculosis predictive diagnosis. *Scientific Reports*, 11(1), pp.1–11. Available at: <https://doi.org/10.1038/s41598-021-94347-6>.
- Pal, M., 2007. Ensemble Learning with Decision Tree for Remote Sensing Classification. *Proceedings of World Academy of Science Engineering and Technology Vol 26 Parts 1 and 2 December 2007*, 26(December), pp.735–737. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.74.963&rep=rep1&type=pdf>.
- Pal, M., 2008. Ensemble of support vector machines for land cover classification. *International Journal of Remote Sensing*, 29(10), pp.3043–3049.
- Padamkar, P., 2021. Machine Learning Architecture: Process And Types of Machine Learning. *EDUCBA*. Available at: <https://www.educba.com/machine-learning-architecture/> [Accessed April 22, 2022].
- Peng, C.Y.J., Lee, K.L. and Ingersoll, G.M., 2002. An introduction to logistic

regression analysis and reporting. *Journal of Educational Research*, 96(1), pp.3–14.

- Perelman School Of Medicine, 2018. MICCAI BraTS 2018: Clinical Relevance | Section for Biomedical Image Analysis (SBIA) | Perelman School of Medicine at the University of Pennsylvania. Available at: <https://www.med.upenn.edu/sbia/brats2018/data.html> [Accessed April 13, 2022].
- Polikar, R., 2009. Ensemble learning. *Scholarpedia*, 4(1), p.2776.
- Pui, C.-H., 1995. Childhood leukemias. *New England Journal of Medicine*, 332(24), pp.1618–1630.
- Purwanti, E. and Calista, E., 2017. Detection of acute lymphocyte leukemia using k-nearest neighbor algorithm based on shape and histogram features. *Journal of Physics: Conference Series*, 853(1).
- Pushpalata Pujari and Gupta, J.B., 2012. Improving Classification Accuracy by Using Feature Selection and Ensemble Model. *International Journal of Soft Computing and Engineering (IJSCE)*, 2(2), pp.380–386.
- Rajini, A., 2015. Survey On Data Mining Algorithms To Predict Leukemia Types. *International Journal for Research in Science Engineering & Technology IJRSET*, 2(5), pp.42–46.
- Rao, R.B., Fung, G. and Rosales, R., 2008. On the dangers of cross-validation. An experimental evaluation. *Society for Industrial and Applied Mathematics - 8th SIAM International Conference on Data Mining 2008, Proceedings in Applied Mathematics 130*, 2, pp.588–596.
- Rathore, N., Divya and Agarwal, S., 2014. Predicting the survivability of breast cancer patients using ensemble approach. *Proceedings of the 2014 International Conference on Issues and Challenges in Intelligent Computing Techniques, ICICT 2014*, pp.459–464.
- Ratley, A., Minj, J. and Patre, P., 2020. Leukemia disease detection and classification using machine learning approaches: A review. *2020 1st International Conference on Power, Control and Computing Technologies, ICPC2T 2020*, pp.161–165.
- Reddy, S., Fox, J. and Purohit, M.P., 2019. Artificial intelligence-enabled healthcare delivery. *Journal of the Royal Society of Medicine*, 112(1), pp.22–28.
- Ribeiro, M.H.D.M. and dos Santos Coelho, L., 2020. Ensemble approach based on bagging, boosting and stacking for short-term prediction in agribusiness time series. *Applied Soft Computing Journal*, 86, p.105837. Available at: <https://doi.org/10.1016/j.asoc.2019.105837>.
- Rokach Lior, O.M., 2005. Decision Trees. In *Data Mining And Knowledge Discovery handbook*. pp. 44–45.
- Rupapara, V., Rustam, F., Aljedaani, W., Shahzad, H.F., Lee, E. and Ashraf, I., 2022. Blood cancer prediction using leukemia microarray gene data and hybrid logistic vector trees model. *Scientific Reports*, 12(1), pp.1–15. Available at: <https://doi.org/10.1038/s41598-022-04835-6>.
- Russell, S. and Norvig, P., 2020. Russell & Norvig, Artificial Intelligence: A Modern Approach, 4th Edition | Pearson. *Pearson*. Available at: <https://www.pearson.com/us/higher-education/program/Russell-Artificial->

Intelligence-A-Modern-Approach-4th-Edition/PGM1263338.html [Accessed April 7, 2022].

- Rustam, F., Ashraf, I., Mehmood, A., Ullah, S. and Choi, G.S., 2019. Tweets classification on the base of sentiments for US airline companies. *Entropy*, 21(11), pp.1–22.
- S. M. Namayandeh, Z.K., M. Lari Najafi, E. Goodarzi and and A. Moslem, 2020. GLOBAL Leukemia in children 0–14 statistics 2018, incidence and mortality and human development index (HDI): GLOBOCAN sources and methods. *Asian Pacific Journal of Cancer Prevention*, 21(5), pp.1487–1494.
- Saberkari, H., Shamsi, M., Joroughi, M., Golabi, F. and Sedaaghi, M.H., 2014. Cancer Classification in Microarray Data using a Hybrid Selective Independent Component Analysis and θ -Support Vector Machine Algorithm. *Journal of Medical Signals and Sensors*, 4(4), pp.291–299.
- Sarkar, S. and Bandyopadhyay Professor, S.K., 2016. Sentiment Analysis-An Objective View. *Journal for Research*, 02(02), pp.26–29.
- Schena, M., Shalon, D., Davis, R. and Brown, P., 1995. Quantitative Monitoring of Gene Expression Patterns with a Complementary DNA Microarray Author (s): Mark Schena , Dari Shalon , Ronald W . Davis , Patrick O . Brown Published by: American Association for the Advancement of Science Stable URL : [http://w. Advancement Of Science, 270\(5235\), pp.467–470](http://w. Advancement Of Science, 270(5235), pp.467–470).
- Schölkopf, B., Burges, C. and Vapnik, V., 1996. Incorporating invariances in support vector learning machines. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 1112 LNCS, pp.47–52.
- Shafique, S. and Tehsin, S., 2018. Acute lymphoblastic leukemia detection and classification of its subtypes using pretrained deep convolutional neural networks. *Technology in Cancer Research and Treatment*, 17, pp.1–7.
- Shah, C. and Jivani, A.G., 2013. Comparison of data mining classification algorithms for breast cancer prediction. *2013 4th International Conference on Computing, Communications and Networking Technologies, ICCCNT 2013*, pp.8–11.
- Shaheen, M., Khan, R., Biswal, R.R., Ullah, M., Khan, A., Uddin, M.I., Zareei, M. and Waheed, A., 2021. Acute Myeloid Leukemia (AML) Detection Using AlexNet Model. *Complexity*, 21(1), pp. 1-8.
- Shahraki, A., Abbasi, M. and Haugen, Ø., 2020. Boosting algorithms for network intrusion detection: A comparative evaluation of Real AdaBoost, Gentle AdaBoost and Modest AdaBoost. *Engineering Applications of Artificial Intelligence*, 94(February), p.103770. Available at: <https://doi.org/10.1016/j.engappai.2020.103770>.
- Shajahaan, S.S., Shanthi, S. and Manochitra, V., 2013. Application of Data Mining Techniques to Model Breast Cancer Data. *International journal of Emerging Technology and Advanced Engineering*, 3(11), pp.1–8. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.638.8687&rep=rep1&type=pdf>.
- Siegel, R.L., Miller, K.D. and Jemal, A., 2016. Cancer statistics, 2016. *CA: A Cancer Journal for Clinicians*, 66(1), pp.7–30.
- Spanhol, F., Oliveira, L. S., Petitjean, C. and Heutte, L., 2016. Breast Cancer

- Histopathological Database (BreakHis) – Laboratório Visão Robótica e Imagem. , pp.1–3. Available at: <https://web.inf.ufpr.br/vri/databases/breast-cancer-histopathological-database-breakhis/> [Accessed April 13, 2022].
- Spanhol, F.A., Oliveira, L.S., Petitjean, C. and Heutte, L., 2016. A Dataset for Breast Cancer Histopathological Image Classification. *IEEE Transactions on Biomedical Engineering*, 63(7), pp.1455–1462.
- Stirewalt, D.L., Meshinchi, S., Kopecky, K.J., Fan, W., Pogosova-Agadjanyan, E.L., Engel, J.H., Cronk, M.R., Dorcy, K.S., McQuary, A.R., Hockenbery, D., Wood, B., Heimfeld, S. and Radich, J.P., 2008. Identification of genes with abnormal expression changes in acute myeloid leukemia. *Genes Chromosomes and Cancer*, 47(1), pp.8–20.
- Suckling, J., Boggis, C.R.M., Hutt, I., Astley, S., Betal, D., Cerneaz, N., Karrsemeijer, N. and Clark, A., 1994. The mini-MIAS database of mammograms. *The Mammographic Image Analysis Society Digital Mammogram Database Exerpta Medica. International Congress Series 1069*, pp.375–378. Available at: <http://peipa.essex.ac.uk/info/mias.html> [Accessed April 13, 2022].
- Suji, R. and Rajagopalan, S., 2013. An automatic Oral Cancer Classification using Data Mining Techniques. *International Journal of Advanced Research in Computer and Communication Engineering*, 2(10), pp.3759–3765.
- Sumanta Saha, S.B., 2017. Principal Component Analysis - A Survey. *Ijarccce*, 6(6), pp.312–320.
- Sung, H., Ferlay, J., Siegel, R.L., Laversanne, M., Soerjomataram, I., Jemal, A. and Bray, F., 2021. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA: A Cancer Journal for Clinicians*, 71(3), pp.209–249.
- Svetnik, V., Liaw, A., Tong, C., Christopher Culberson, J., Sheridan, R.P. and Feuston, B.P., 2003. Random Forest: A Classification and Regression Tool for Compound Classification and QSAR Modeling. *Journal of Chemical Information and Computer Sciences*, 43(6), pp.1947–1958.
- Syarif, I., Zaluska, E., Prugel-Bennett, A. and Wills, G., 2012. Application of bagging, boosting and stacking to intrusion detection. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 7376 LNAI, pp.593–602.
- Takiar, R., Nadayil, D. and Nandakumar, A., 2010. Projections of number of cancer cases in India (2010-2020) by cancer groups. *Asian Pacific Journal of Cancer Prevention*, 11(4), pp.1045–1049.
- Techonlogy, J.S. of R., 1998. Japanese Society of Radiological Technology Database. *Public Interest Incorporated Association*. Available at: <http://db.jsrt.or.jp/eng.php> [Accessed April 13, 2022].
- Teman, C.J., Wilson, A.R., Perkins, S.L., Hickman, K., Josef, T. and Salama, M.E., 2011. Quantification of Fibrosis and Osteosclerosis in Myeloproliferative Neoplasms: A Computer-Assisted Image Study. , 34(7), pp.871–876.
- Time-lapse, 2020. 2D+Time Datasets – Cell Tracking Challenge. *Cell Tracking Challenge*. Available at: <http://celltrackingchallenge.net/datasets/> [Accessed April 13, 2022].
- Tomar., D. and Agarwal, S., 2013. A survey on Data Mining approaches for

- Healthcare Divya. *International Journal of Bio-Science and Bio-Technology*, 5(5), pp.241–266.
- Topol, E.J., 2019. High-performance medicine: the convergence of human and artificial intelligence. *Nature Medicine*, 25(1), pp.44–56.
- Ulman, V. et al., 2017. An objective comparison of cell-tracking algorithms. *Nature Methods*, 14(12), pp.1141–1152.
- Vasighizaker, A., Sharma, A. and Dehzangi, A., 2019. A novel one-class classification approach to accurately predict disease-gene association in acute myeloid leukemia cancer. *PLoS ONE*, 14(12), pp.1–12. Available at: <http://dx.doi.org/10.1371/journal.pone.0226115>.
- Vo, H.T., Lam, H.C., Nguyen, D.D. and Tuong, N.. et al., 2016. Topic classification and sentiment analysis for Vietnamese education survey system. *Asian Journal of Computer Science and Information Technology*, 6(3), pp.27–34.
- Wainberg, M., Merico, D., Delong, A. and Frey, B.J., 2018. Deep learning in biomedicine. *Nature Biotechnology*, 36(9), pp.829–838.
- Walsh, S., de Jong, E., van Timmeren, J., Ibrahim, A., Compter, I., Peerlings, J., Sanduleanu, S., Refaee, T., Keek, S., Larue, R., van Wijk, Y., Even, A., Jochems, A., Barakat, M., Leijenaar, R. and Lambin, P., 2019. Decision Support Systems in Oncology. *Clinical Cancer Informatics*, pp.1–9.
- Wang, C., Wu, Q., Weimer, M. and Zhu, E., 2019. FLAML: A Fast and Lightweight AutoML Library. , 21(1), pp.1–14. Available at: <http://arxiv.org/abs/1911.04706>.
- Wang, Z., Wu, Z., Wang, R. and Ren, Y., 2015. Twitter Sarcasm Detection Exploiting a Context-Based Model. In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*. pp. 77–91.
- Warwick, 2015. Tissue Image Analytics (TIA) Centre. *Tissue Image Analytics (TIA) Centre*. Available at: https://warwick.ac.uk/fac/cross_fac/tia/data/glascontest/about [Accessed April 13, 2022].
- Wen, J., Xu, Yong, Li, Z., Ma, Z. and Xu, Yuanrong, 2018. Inter-class sparsity based discriminative least square regression. *Neural Networks*, 102, pp.36–47.
- Wibawa, A.P., Kurniawan, A.C., Murti, D.M.P., Adiperkasa, R.P., Putra, S.M., Kurniawan, S.A. and Nugraha, Y.R., 2019. Naïve Bayes Classifier for Journal Quartile Classification. *International Journal of Recent Contributions from Engineering, Science & IT (iJES)*, 7(2), p.91.
- Wolach, O. and Stone, R.M., 2017. Mixed-phenotype acute leukemia: Current challenges in diagnosis and therapy. *Current Opinion in Hematology*, 24(2), pp.139–145.
- Xiao, Y., Fortin, M., Unsgård, G., Rivaz, H. and Reinertsen, I., 2017. REtroSpective Evaluation of Cerebral Tumors (RESECT): A clinical database of pre-operative MRI and intra-operative ultrasound in low-grade glioma surgeries: A. *Medical Physics*, 44(7), pp.3875–3882.
- Xiao, Y., Wu, J., Lin, Z. and Zhao, X., 2018. A deep learning-based multi-model ensemble method for cancer prediction. *Computer Methods and Programs in Biomedicine*, 153, pp.1–9.

- Xing, F. and Yang, L., 2016. Robust nucleus/cell detection and segmentation in digital pathology and microscopy images: A comprehensive review. *IEEE Reviews in Biomedical Engineering*, 9(c), pp.234–263.
- Yu, K.-H., Beam, A.L. and Kohane, I., 2018. Artificial Intelligence in Healthcare. *Nat. Biomed. Eng*, 2(October), pp.719–731.
- Zahurak, M., Parmigiani, G., Yu, W., Scharpf, R.B., Berman, D., Schaeffer, E., Shabbeer, S. and Cope, L., 2007. Pre-processing Agilent microarray data. *BMC Bioinformatics*, 8, pp.1–13.
- Zhang, C. and Ma, Y., 2012. Ensemble machine learning: *Methods and applications*, pp.1-329.
- Zhang, L., Chen, Y., Abraham, A. and Chen, Z., 2011. Hybrid flexible neural tree approach for leukemia cancer classification. *Proceedings of the 2011 World Congress on Information and Communication Technologies, WICT 2011*, pp.32–35.
- Zhang, Y., Zhang, H., Cai, J. and Yang, B., 2014. A weighted voting classifier based on differential evolution. *Abstract and Applied Analysis*, 2014, pp.1–6.
- Zhou, M., Wu, K., Yu, L., Xu, M., Yang, J., Shen, Q., Liu, B., Shi, L., Wu, S., Dong, B., Wang, H., Yuan, J., Shen, S. and Zhao, L., 2021. Development and Evaluation of a Leukemia Diagnosis System Using Deep Learning in Real Clinical Scenarios. *Frontiers in Pediatrics*, 9(6), pp.1–10.
- Zou, J., Huss, M., Abid, A., Mohammadi, P., Torkamani, A. and Telenti, A., 2019. A primer on deep learning in genomics. *Nature Genetics*, 51(1), pp.12–18. Available at: <http://dx.doi.org/10.1038/s41588-018-0295-5>.