

Table 2.1 Computational Approaches for Heart Disease Prediction: A Review

Year	Author	Methodology	Datasets	Parameter & Result
2024	Amrit Singh et al. [41]	Prediction: Decision Tree (DT), Random Forest (RF), Support Vector Machine (SVM), and Principal Component Analysis (PCA)	Framingham Heart Study dataset: 4,240 instances, 15 attributes	Accuracy: Random Forest - 97%
2024	Hosam F. El-Sofany [42]	Feature selection: chi-square, ANOVA, and mutual information (MI), Prediction: Naïve Bayes, SVM, Voting, XGBoost, AdaBoost, Bagging, DT, KNN, RF, and LR	Cleveland Heart Disease dataset, 503 instances, 13 attributes	Accuracy: XGBoost - 97.57%
2023	Chintan M. Bhatt et al. [43]	Prediction: Decision Tree, Random Forest, Multilayer Perceptron, XGBoost	Kaggle: 70,000 instances (80:20 split)	Accuracy: MP: 87.28% (CV), 86.94% (no CV)

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2023	Nadikatla Chandrasekhar et al. [44]	Prediction: RF, KNN, Logistic Regression, Naïve Bayes, Gradient Boosting, AdaBoost, Soft Voting Ensemble	UC Irvine ML Repository (303 instances), IEEE Dataport (1190 instances)	Accuracy: LR - 90.16%, AB - 89.67%, Soft Voting - 93.44% (UCI), 95% (IEEE)
2023	Ahmad Ayid Ahmad et al. [45]	Feature selection: Jellyfish Optimization Algorithm, Prediction: ANN, DT, AdaBoost, and Support Vector Machine (SVM)	UCI Repository: Cleveland Heart Disease dataset, 1025 instances, 14 attributes	Accuracy: SVM- 98.47%
2023	Diaa Salama Abdelminaam et al.[46]	Prediction: Logistic Regression, Gradient Boosting, K-Nearest Neighbors (KNN), Random Forest, Naïve Bayes, and Decision Tree	Datasets: 574,440 instances, attributes range (12 to 21)	Accuracy: Logistic Regression Dataset 1 - 91.6%, Dataset 2 - 90.8%
2022	Ashish Kumar et al.[47]	Prediction: CNN, ANN, SVM, Naïve Bayes, and KNN	UCI Machine Learning Repository: 383 instances, 14 attributes	Accuracy: CNN - 98%

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2022	Abdul Saboor et al.[48]	Prediction: RF, SVM, XGBoost, Decision Tree, Naïve Bayes, Logistic Regression, LDA, AdaBoost, Extra Trees	UCI Repository: Cleveland dataset (303 instances, 13 attributes)	Accuracy: SVM - 96.72%
2022	Sashank Yadav et al.[49]	Prediction: Naïve Bayes, Decision Tree, Logistic Regression, KNN, SVM, RF	UCI ML Repository: heart disease dataset. 55.56% positive, 44.44% negative	Accuracy: KNN – 85.18%
2021	Harshit Jindal et al.[50]	Prediction: Logistic Regression, KNN, Random Forest	UCI Repository: Heart Disease dataset. 13 attributes, 304 records	Accuracy: KNN – 88.52%
2021	Dhai Eddine Salhi et al.[51]	Prediction: Neural Networks (NN), Support Vector Machine (SVM), and K-Nearest Neighbors (KNN)	Algerian hospitals: 1200 instances, 13 attributes, Training -80%, Testing – 20%	Accuracy: Neural Network - 93%

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2021	Baban U. Rindhe et al.[52]	Prediction: Support Vector Machine (SVM), Artificial Neural Network (ANN), and Random Forest	UCI Repository: Cleveland Heart dataset, 303 instances, 14 attributes	Accuracy: Support Vector – 84.0%
2021	Apurv Garg et al.[53]	Prediction: K-Nearest Neighbors (KNN) and Random Forest (RF)	Kaggle: Heart Disease UCI dataset, 303 instances, 13 attributes	Accuracy: KNN – 86.89%
2020	Vijeta Sharma et al.[54]	Prediction: Random Forest, SVM, Naïve Bayes, Decision Tree	UCI Repository: Cleveland dataset (1025 instances, 14 attributes)	Accuracy: RF - 99%
2020	Dimas Aryo Anggoro et al.[55]	Prediction: SVM, KNN	Kaggle: Heart Disease dataset (304 instances, 14 attributes)	Accuracy: SVM (with Normalization) - 90.10%

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2020	Mahesh Parmar et al.[56]	Prediction: KNN, RF, SVM, Naïve Bayes, Deep Neural Networks	UCI Repository: Heart Disease dataset (303 instances, 14 attributes)	Accuracy: DNN (optimized) - 99%
2020	R. Jane Preetha Princy et al.[57]	Prediction: Decision Tree, Naïve Bayes, Logistic Regression, RF, SVM, KNN	Kaggle: Cardiovascular disease dataset (12 attributes)	Accuracy: Decision Tree - 73%, LR - 72%, RF - 71%, KNN - 66%, Naïve Bayes - 60%
2020	Jian Ping Li et al.[58]	Feature selection: MRMR, LASSO, LLBFS, FCMIM. Prediction: SVM, LR, ANN, KNN, NB, DT	UCI Repository: Cleveland dataset (297 instances, 13 attributes)	Accuracy: SVM (FCMIM) - 92.37%
2020	Viren Viraj Shankar et al.[59]	Prediction: CNN, Naïve Bayes, KNN	Hospital dataset (13 attributes)	Accuracy: CNN - 88%

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2020	Ilias Tougui et al.[60]	Mining tools: Orange, Weka, RapidMiner, Knime, Matlab, Scikit-Learn. Prediction: LR, SVM, KNN, ANN, NB, RF	UCI Repository: Cleveland dataset (303 instances, 13 attributes)	Accuracy: Matlab's ANN - 85.86%
2020	Pooja Anbuselvan et al.[61]	Prediction: Logistic Regression, Naïve Bayes, Support Vector Machine (SVM), K-Nearest Neighbors (KNN), Decision Tree, Random Forest, and XGBoost.	UCI Repository: Cleveland Heart Disease dataset. 303 instances 14 attributes	Accuracy: Random Forest - 86.89%
2019	Hager Ahmed et al.[62]	Prediction: Decision Tree, SVM, Random Forest, Logistic Regression	UCI Repository: Cleveland dataset (303 instances, 13 attributes)	Accuracy: RF – 94.9%
2019	Abhijeet Jagtap et al.[63]	Prediction: Support Vector Machine (SVM), Logistic Regression (LR), and Naïve Bayes (NB)	UCI Repository: Training - 75% Testing - 25%	Accuracy: SVM- 64.4%,

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2017	Sundas Naqeeb Khan et al.[64]	Prediction: Support Vector Machine (SVM), Artificial Neural Networks (ANN), Decision Tree (C4.5), and RIPPER	UCI Repository: Cleveland Heart Disease dataset, 296 instances, 14 attributes	Accuracy: SVM – 84.12%
2013	Dhanashree S. Medhekar et al.[65]	Prediction: Naïve Bayes	UCI Repository: Cleveland dataset (303 instances, 14 attributes)	Accuracy: Naïve Bayes - 89.58%