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Appendix 1. delves deep into the effectiveness of SVM algorithms for diagnosing diabetes mellitus

Author	Year	Sample size	Features	Additional model	Accuracy	AUC	F1 SCORE
Islam, M. et. al	2020	1570	type of place,	none	0.929	0.662	N/A
Li, Y. et. al	2020	147	N/A	none	0.972	N/A	N/A
Deepa, S.N et. al	2021	900	Images of the tongue	CNN	0.978	N/A	0.98
Samreen, S. et. al	2021	520	Age, sex, polyuria, polydipsia, sudden weight loss, weakness, polyphagia, genital thrush, visual blurring, itching, irritability, delayed healing, partial paresis, muscle stiffness, alopecia, obesity	none		0.99	0.98
Ellouze, A. et. al	2022	768	pregnancy, plasma glucose concentration, diastolic blood pressure, triceps skinfold thickness, insulin, mass, pedigree of diabetes, age	none	0.8	0.87	0.8
Zee, B. et. al	2022	2221	Retinal imaging with a non-mydriatic fundus camera.	none	N/A	0.993	N/A
Villanueva, O. et. al	2023	768	Number of pregnancies, glucose level, diastolic blood pressure, thickness of skin folds, insulin levels, BMI, genetic history of diabetes, age.	none	0.67	0.56	N/A
Alzboon, M. et. al	2023	768	Data set of 8 demographics and clinical details: age, gender, and number of pregnancie, BMI, blood pressure, skin thickness, insulin level, and glucose concentration	none	none	0.822	0.583
Duc, L . et. al	2023	N/A	N/A	ANN	0.938	0.96	N/A
Shaukat, Z.et. al	2023	768	Number of pregnancies,	none	0.792	0.723	0.79

Appendix 2. delves deep into the effectiveness of RF algorithms for diagnosing diabetes mellitus

Author	Year	Sample size	Features	another method	accuracy	AUC	F1
Islam, M. et. al	2020	1570	type of place,	Arm circumference; take medicine,	0.923	0.593	N/A
Kopitar, L. et. al	2020	3723	A set of 58 variables that were not mentioned specifically. Generally it includes INDRISC (FR) questionnaire, physical activity (at least 30 min during the day), fruit and vegetable consumption the history of antihypertensive drug treatment, history of high blood glucose levels and family history of diabetes.	none	N/A	0.852	N/A
Samreen, S. et. al	2021	520	Age, sex, polyuria, polydipsia, sudden weight loss, weakness, polyphagia, genital thrush, visual blurring, itching, irritability, delayed healing, partial paresis, muscle stiffness, alopecia, obesity	none	0.983	0.99	N/A
Xiang, Y. et. al	2021	57672 cases and 115344 retinal i9mages	Fundus images, age, sex, height, weight, body-mass index and blood pressure	none	0.861	N/A	N/A
Alzboon, M. et. al	2023	768	Data set of 8 demographics and clinical details: age, gender, and number of pregnancie, BMI, blood pressure, skin thickness, insulin level, and glucose concentration	none	N/A	0.811	0.576
Nguyen et. al	2023	2153	Gender, age, MI, waist and hip circuference, SBP, DBP, FPG, 2HPG, cholestrol, TG, HDL	none	0.85	0.94	0.94

Author	Year	Sample size	Features	Additional model	F1 SCORE	AUC	Accuracy
Shaukat, Z. et. al	2023	768	Number of pregnancies,	none	0.7879	0.832	0.78

Appendix 3. delves deep into the effectiveness of KNN algorithms for diagnosing diabetes mellitus

Author	Year	Sample size	Features	Additional model	F1 SCORE	AUC	Accuracy
Samreen, S. et. al [87]	2021	520	Age, sex, polyuria, polydipsia, sudden weight loss, weakness, polyphagia, genital thrush, visual blurring, itching, irritability, delayed healing, partial paresis, muscle stiffness, alopecia, obesity	N/A	N/A	0.98	0.9487
Ellouze, A. et. al(46)	2022	768	pregnancy, plasma glucose concentration, diastolic blood pressure, triceps skinfold thickness, insulin, mass, pedigree of diabetes, age	N/A	N/A	0.77	0.76
Hossain, E. et. al[96]	2022	N/A	number of pregnancies, BMI, insulin levels, age, glucose, skin fold thickness, blood pressure, diabete pedigree function.	LightGBM	0.84	0.936	0.891
Alzboon, M. et. al [102]	2023	768	Data set of 8 demographics and clinical details: age, gender, and number of pregnancie, BMI, blood pressure, skin thickness, insulin level, and glucose concentration	N/A	0.56	0.776	N/A
Deepa et. al [103]	2023	N/A	Not applicable	N/A	N/A	N/A	0.773

Appendix 4. delves deep into the effectiveness of LR algorithms for diagnosing diabetes mellitus

Author	Year	Sample size	Features	Additional model	F1 SCORE	AUC	Accuracy

Author	Year	Sample	Features				
Saleh Albahli	2020	253395	FBS, HbA1c, gamma-GTP, BMI, TG, Age, Uric acid, Sex, Physical activity, Drinking, Smoking, Family history	k-mean clustering	N/A	N/A	0.9753
Islam, M. et. al (30)	2020	1570	type of place, electricity, wealth index, age, education, working status, smoking status, Arm circumference; take medicine, weight and BMI	N/A		0.682	0.925
Samreen, S. et. al (39)	2021	520	Age, sex, polyuria, polydipsia, sudden weight loss, weakness, polyphagia, genital thrush, visual blurring, itching, irritability, delayed healing, partial paresis, muscle stiffness, alopecia, obesity	N/A	N/A	0.97	0.9269
Villanueva, O. et. al(53)	2023	768	Number of pregnancies, glucose level, diastolic blood pressure, thickness of skin folds, insulin levels, BMI, genetic history of diabetes, age.	N/A	N/A	0.555	0.698
Alzboon, M. et. al [102]	2023	768	Data set of 8 demographics and clinical details: age, gender, and number of pregnancie, BMI, blood pressure, skin thickness, insulin level, and glucose concentration	N/A	0.613	0.828	N/A
Deepa et. al [103]	2023	N/A	Not applicable	N/A	N/A	N/A	0.793
Shaukat, Z.et. al [108]	2023	768	Number of pregnancies, Plasma glucose concentration, Diastolic blood pressure, Triceps skinfold thickness, 2-hour serum insulin, BMI, Diabetes pedigree function, Age.	N/A	N/A	0.848	0.7966

| Zhang, J. et. al [109] | 2023 | 820 | A set of nine clinical feature: admission glucose, BMI>28, cardiovascular disease, age, NAFLD, ALT, HDL-C<1.03, UA, smoking | N/A | 0.357 | 0.819 | N/A |

Appendix 4. delves deep into the effectiveness of NN algorithms for diagnosing diabetes mellitus

Author	Year	Sample size	Features	Additional model	F1 SCORE	AUC	Accuracy
Islam, M. et. al (30)	2020	1570	type of place, electricity, wealth index, age, education, working status, smoking status, Arm circumference; take medicine, weight and BMI	N/A	N/A	0.68	0.928
Yue, L. et. al (33)	2020	650 groups	FBS, 2hpp, clinical symptoms : thirst, dry mouth, excessive drinking, polyphagia, polyuria, and weight loss, family history, smoking and drinking	MATLAB NN	N/A	N/A	0.92
Deepa, S.N et. al (35)	2021	900	Images of the tongue	CNN+SVM	0.9831	N/A	0.9782
Lee, W.S. et. al(38)	2021	1000	Synthetic glucose profiles	shallow NN		N/A	0.873
Srivastava	2021	unmentioned	unmentioned	DNN	0.8931	0.9236	0.9474

Author	Year	Dataset	Features	Method			
A.K, et. al (40)		Pima Indian					
Alshari, H. et. al (43)	2022	14682	physical activity, dietary, smoking features, Alcohol consumption, hypertention, age, gender, race, marital status, education level, annual family income, and the ratio of family income to poverty guidelines	N/A	0.721	0.821	0.829
Dd Antonio, A et. al[100]	2023	1019	DIASTOLIC.BP, SYSTOLIC.BP, Mmolgluc, HEIGHT, HOMA_IR, LDL, WAIST, TG, EDUCATION, INSULIN, Gender, CHOLESTEROL, GLUCOSE, Age,	N/A	0.86	0.934	0.86
Alzboon, M. et. al [102]	2023	768	Data set of 8 demographics and clinical details: age, gender, and number of pregnancie, BMI, blood pressure, skin thickness, insulin level, and glucose concentration	N/A	0.61	0.825	N/A
Duc, L . et. al [104]	2023	Not applicable	Not applicable	ANN+SVM	N/A	0.96	0.938

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Appendix 5. delves deep into the effectiveness of deep learning algorithms for diagnosing diabetes mellitus

Author	Year	Sample size	Features	Deep learning method	Accuracy	AUC	F1 SCORE
Dietz, B. et. al	2021	2371	T1-weighted whole-body MRI, sex, age, BMI, insulin sensitivity, HbA1c	dense CNN	N/A	0.87	N/A
Islam, M. et. al	2021	492	Retinal images	CNN	N/A	0.662	N/A
Lee, W.S. et. al	2021	1000	synthetic glucose profile	MLP	0.873	N/A	N/A
Lee, W.S. et. al	2021	1000	synthetic glucose profile	CNN	0.9	N/A	N/A
Lee, W.S. et. al	2021	1000	synthetic glucose profile	RNN	0.865	N/A	N/A
Zhang,k. et. al	2021	57672 cases and 115344 retinal images	Fundus images, age, sex, height, weight, body-mass index and blood pressure	CNN	0.93	N/A	N/A
ANAYA-ISAZA, A. et.al	2022	167	foot thermography	CNN	0.8278	N/A	0.8583
Balasubramaniyan, S. et. al	2022	2675	Tongue images: tongue shape and color, fissure identification, fur color and fur thickness, tooth markings, and red dot	CNN	0.984	N/A	0.99
Ellouze, A. et. Al	2022	768	pregnancy, plasma glucose concentration, diastolic blood pressure, triceps skinfold thickness, insulin, mass, pedigree of diabetes, age	RNN	0.93	0.95	0.93
Ellouze, A. et. al	2022	768	pregnancy, plasma glucose concentration, diastolic blood pressure, triceps skinfold thickness, insulin, mass, pedigree of diabetes, age	CNN	0.9	0.92	0.9

Author	Year	Dataset	Features	Model			
Ellouze, A. et. al	2022	768	pregnancy, plasma glucose concentration, diastolic blood pressure, triceps skinfold thickness, insulin, mass, pedigree of diabetes, age	Long short-term memory (LSTM)	0.97	0.99	0.97
Ellouze, A. et. al	2022	768	pregnancy, plasma glucose concentration, diastolic blood pressure, triceps skinfold thickness, insulin, mass, pedigree of diabetes, age	Long short-term memory (LSTM)	0.95	0.97	0.95
Fufurin, I. et. al	2022	1200 infrared exhaled breath spectra from 120 volunteers	Exhaled breath samples and using IR breath spectra.	CNN	0.997	0.99	N/A
Rabie, O. et. al	2022	829	Age, BMI, glucose, the number of pregnancies, blood pressure, skin fold thickness, two hour insulin, pedigree diabetes function	DNN	0.9307	N/A	0.92
Nilashi, M. et. al	2023	768	Number of times pregnant, 2-hours gloucose, diastolic blood pressure, triceps skin fold thickness, 2 hours serum insulin, BMI, diabetes pedigree function, age.	DBN	0.9832	N/A	N/A
Önal et.al	2023	68	Full irtis images, the iris segmentation from raw images, the segmentation of the pancreatic region in the iridology chart	CNN	0.8	N/A	0.833