

Supplementary

Table S1: ML-related articles for the diagnosis of OM with otoscopy

Year	Author	Classes	Images	Model	Accuracy	Sensitivity	Specificity	Dice
2022	Sandström J ^{Error!}	3	273	GoogleNet	95%	93%	100%	—
2022	Chen YC ^{Error!}	10	2820	InceptionV3	98%	97.90%	99.80%	—
2022	Mao C ^{Error! Reference}	4	2657	EfficientNet	92.42%	—	—	—
2022	Crowson MG ^{Error!}	3	661	ResNet, DenseNet	95.50%	—	—	—
2022	Moham KK ^{Error!}	4	880	CNN, LSTM	100%	100%	100%	—
2022	Choi Y ^{Error! Reference}	3	6630	EfficientNet	95.32%	95.38%	94.65%	—
2022	Habib AR ^{Error!}	5	6527	ResNet	74.50%	—	—	—
2022	Zeng J ^{Error! Reference}	2	2790	ResNet, UNet	81%	—	—	—
2022	Byun H ^{Error!}	2	1130	CNN	94.10%	91.60%	96.00%	—
2022	Viscaino M ^{Error!}	4	22000	VGG16	92%	85%	95%	—
2021	Alhud A ^{Error!}	4	857	CNN	98.26%	97.68%	99.30%	—
2021	Cai Y ^{Error! Reference}	4	7146	CNN	93.37%	—	—	—
2021	Byun H ^{Error!}	4	2372	ResNet	97.18%	—	—	—
2021	Crowson MG ^{Error!}	2	338	ResNet	83.80%	—	—	—
2021	Pham VT ^{Error!}	4	1012	CNN	95.80%	92.00%	97.60%	0.929
2021	Sundgaard JV ^{Error!}	3	1336	InceptionV3	86%	—	—	—
2021	Zeng X ^{Error!}	8	20542	DenseNet	95.59%	—	—	—
2021	Kashani RG ^{Error!}	2	1179	CNN	90.30%	90.50%	90.10%	—
2021	Tsutsu K ^{Error!}	5	400	MobileNetV2	77%	88%	84%	—
2021	Basar E ^{Error!}	2	282	VGG16	88.56%	86.52%	90.25%	—
2021	Cha D ^{Error! Reference}	6	7500	ResNet	82.03%	—	—	—
2021	Wang W ^{Error!}	2	100(video)	ResNet	81.70%	83%	80%	—
2021	Binol H ^{Error!}	4	394(video)	CNN	84.80%	80.20%	94.40%	—
2020	Wu Z ^{Error! Reference}	3	12305	Xception	97.82%	96.76%	98.37%	—
2020	Khan MA ^{Error!}	3	2904	DenseNet	94.90%	—	—	—
2020	Cama S ^{Error!}	3	454	InceptionV2, ResNet	88.10%	—	—	—
2020	Visc MV ^{Error!}	4	720	SVM	99.03%	98.06%	99.35	—
2020	VT Pham ^{Error!}	2	1139	CNN	—	—	—	0.895
2020	Habib AR ^{Error!}	3	233	InceptionV3	76%	—	—	—
2020	Binol H ^{Error!}	2	73	Random forest	84.60%	—	—	—
2020	Binol H ^{Error!}	6	136(video)	UNet	—	—	—	0.84
2019	Cha D ^{Error! Reference}	6	10544	InceptionV3, ResNet	94.20%	93.69%	96.82%	—
2019	Côme Z ^{Error!}	4	956	VGG16	99.47%	99.35%	99.77%	—
2019	Livi D ^{Error! Reference}	14	1366	Google-AutoML-interface	88.70%	86.10%	—	—
2019	Lee JY ^{Error! Reference}	2	3156	CNN	91.00%	90.50%	92.90%	—
2019	Seok J ^{Error! Reference}	2	920	Mask R-CNN	91.35%	81.36%	96.03%	—

2018	Tran TT ^{Error!}	3	1230	CNN	91.41%	89.48%	93.33%	—
2018	Mybu HC ^{Error!}	5	389	CNN	86.84%	86.80%	96.40%	—
2018	Sena C ^{Error! Reference}	14	247	CNN	84.90%	—	—	—
2018	Kashani MS ^{Error!}	2	108	InceptionV3	82.20%	—	—	—
2016	Mybu HC ^{Error!}	3	562	Decision Tree	80.61%	80.60%	94.40%	—
2015	Chue KS ^{Error!}	2	1195	SVM	88.50%	89.63%	86.90%	—
2014	CK Shie ^{Error!}	2	865	Adaboost	88.06%	—	—	—

Table S2: ML-related articles for the diagnosis of OM based on CT, X-ray, OCT and tympanogram

Type	Year	Author	Classes	Images	Model	Accuracy	Sensitivity	Specificity	AUC
CT	2022	Wang ZC ^{Error! Reference source}	4	973	CNN	90.10%	—	—	0.96
CT	2022	Eroglu O ^{Error! Reference source}	4	3093	CNN	95.40%	95.13%	97.92%	—
CT	2022	Takah M ^{Error! Reference source}	2	4950	MobileNet-V2	81.14%	84.95%	77.33%	—
CT	2022	Duan B ^{Error! Reference source not}	4	1872	GoogleNet	99%	—	—	—
CT	2020	Wang YM ^{Error! Reference}	4	1147	Inception-V3	—	83.30%	91.40%	0.92
X-ray	2020	Lee KJ ^{Error! Reference source not}	2	9988	CNN	90.10%	96.4%	74.5%	0.968
OCT	2022	Monroy GL ^{Error! Reference}	4	175	Random forest	95.41%	—	—	—
OCT	2019	Monroy GL ^{Error! Reference}	3	58	Random forest	91.10%	—	—	—
Tympanometry	2022	Sundgaard JV ^{Error! Reference}	3	1014	CNN	92.60%	92.20%	92.90%	0.97
Tympanometry	2021	Mercha GR ^{Error! Reference}	4	63	multivariate logistic	94.84%	95.07%	94.64%	0.99
Tympanometry	2021	E. M. Grais ^{Error! Reference}	2	672	CNN	82%	—	—	0.79
Tympanometry	2020	H. BinoJ ^{Error! Reference source}	2	73	Random forest	84.90%	—	—	—

Table S3: Articles for diagnosis of OM using NLP

Year	Author	Classes	Images	Model	Accuracy	Sensitivity	Specificity	F1-score
2021	Binol H ^{Error! Reference source not}	4	173	NCA	—	87.6	94.4	90.20%
2020	Joshua C ^{Error! Reference source}	2	2724	NLP	—	83.40%	95.40%	—
2013	Kuruvilla A ^{Error! Reference}	4	783 patients	Random forest	89.90%	—	—	—
2012	Kuruvilla A ^{Error! Reference}	4	826	Classifier	84%	—	—	—

Table S4: Articles related to the application of ML in OM surgery

Type	Year	Author	Classes	Images	Model	Accuracy	Sensitivity	Specificity	AUC
Tube	2020	Camalan S ^{Error! Reference source}	3	454	InceptionV2	88.10%	—	—	0.96
Tube	2019	Devon Livingstone ^{Error!}	3	734	CNN	84.40%	—	—	—
Tube	2015	Xin Wang ^{Error! Reference source not}	2	215	SVM	90%	85%	92%	—
Cholesteatoma	2021	Miwa T ^{Error! Reference source not}	3	312	SSD	—	42.30%	87.50%	—

Table S5: Articles related to the application of ML in the registration of OM surgery.

Type	Year	Author	Classes	Patients	Model	mIOU	mDice
Registration	2022	Ding AS ^{Error! Reference source not found.}	16	16	ANTs	—	0.56
Registration	2022	Dong B ^{Error! Reference source not found.}	1	17	FNSegNet	0.764	0.858

Registration	2021	Neves CA ^{Error! Reference source not found.}	4	150 (images)	AH-Net	—	0.82
Registration	2021	Nikan S ^{Error! Reference source not found.}	8	39	PWD	—	0.86
Registration	2020	Ly Y ^{Error! Reference source not found.}	3	30	W-Net	—	0.797
Registration	2020	Jeeva S ^{Error! Reference source not found.}	4	50	Mask R-CNN	0.79	0.96
Registration	2019	Fausser J ^{Error! Reference source not found.}	9	24	ASUNet	—	0.663
Registration	2019	Gare BM ^{Error! Reference source not found.}	1	28	Atlas registration	—	0.76
Registration	2018	Powell KA ^{Error! Reference source not found.}	6	26	Atlas registration	—	0.7785
Registration	2017	Lu J ^{Error! Reference source not found.}	1	15	Random forest	—	0.818
Registration	2014	Becker M ^{Error! Reference source not found.}	8	42	PASM	—	0.802
Registration	2011	Noble JH ^{Error! Reference source not found.}	7	6	ASM	—	0.745

Table S6: Articles related to the application of ML in the health management of OM [1–98].

Type	Year	Author	Classes	Patients	Model	Accuracy	Sensitivity	Specificity
NLP	2022	Koyam H ^{Error! Reference source not found.}	2	105	RF, SVM, kNN	81.50%	—	—
NLP	2017	Dowell A ^{Error! Reference source not found.}	6	77582	Software Inference	The Curve of OM morbidity spectrum		
NLP	2012	Szaleniec J ^{Error! Reference source not found.}	2	150	NN	84%	—	—
CV	2020	Camalan S ^{Error! Reference source not found.}	3	454	InceptionV2	88.10%	—	—
CV	2019	Devon Livingstone ^{Error!}	3	734	CNN	84.40%	—	—
CV	2015	Xin Wang ^{Error! Reference source not found.}	2	215	SVM	90%	85%	92%