

Article

Validation of a Point-of-Care Optical Coherence Tomography Device with Machine Learning Algorithm for Detection of Oral Potentially Malignant and Malignant Lesions

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Table S1. Data set for artificial neural network (ANN) training and testing from current study and previous study data-set.

Cases Used for ANN Based Training and Validation							
Histology	Cancer		Dysplastic		Non-dysplastic		Total
Merged-Studies	Present study	Previous study[1]	Present study	Previous study[1]	Present study	Previous study[1]	
Total cases (n)	85		147		167		399
Study wise(n)	75	10	121	26	151	16	399
Training set (n)	25	10	24	26	27	16	128
Test Set (n)	50		97		124		271
Training set (%)	41		34		26		32
Test set (%)	59		66		74		68

Table 2. Artificial neural networks ($n = 14$) used for Feature Extraction and number of layers of each neural Network.

Neural Network Used	Layers
AlexNet	25
VGG16	41
VGG19	47
ResNet-18	72
GoogLeNet	144
MobileNetV2	155
Xception	171
ResNet-50	177
InceptionV3	316
ResNet-101	347
DenseNet-201	709
InceptionResnet-V2	825
NASNetMobile	914
NASNetLarge	1244

Table S3. Test sensitivity and specificity of 14 ANN-SVM models.

Diagnosis	Neural Network	Sensitivity	95% CI	Specificity	95% CI	Accuracy
Cancer Vs Others	NASNetLarge	84.5	70.9–92.8	72.5	66.2–78.2	74.5618
	DenseNet-201	86.2	74.62–93.85	81.4	74.7–85.55	81.936
	InceptionResNet-v2	94.4	83.5–98.7	66.4	59.9–72.5	71.3516
	Xception	84.3	70.9–92.8	78.2	72.2–83.3	79.2194
	ResNet-101	78.6	64.0–88.5	83.8	78.4–88.4	82.7888
	NASNetMobile	82.5	68.6–91.4	84.7	79.4–89.1	84.2304
	VGG19	96.6	86.3–99.5	62.0	55.4–68.3	68.1282
	VGG16	86.3	73.3–94.2	74.7	68.5–80.2	76.7094
	MobileNetV2	92.4	80.8–97.8	63.8	57.2–70.0	68.8432
	ResNet-50	98.5	89.4–99.9	52.0	45.3–58.6	60.2554
	ResNet-18	90.8	78.2–96.7	68.1	61.7–74.1	72.0584
	GoogLeNet	90.6	78.2–96.7	51.5	44.9–58.2	58.4546
	AlexNet	86.7	73.3–94.2	66.4	59.9–72.5	69.9116
	InceptionV3	92.4	80.8–97.8	69.0	62.6–74.9	73.14
Dysplasia Vs Non-Dysplasia	NASNetLarge	80.4	71.1–87.8	57.3	48.1–66.1	67.446
	DenseNet-201	83.5	74.6–90.3	81.5	73.5–87.9	82.3564
	InceptionResNet-v2	88.7	80.6–94.2	63.7	54.6–72.2	74.688
	Xception	93.8	87.0–97.7	47.6	38.5–56.7	67.9212
	ResNet-101	90.7	83.1–95.7	62.9	53.8–71.4	75.1408
	NASNetMobile	70.1	60.0–79.0	66.1	57.1–74.4	67.8768
	VGG19	88.7	80.6–94.2	52.4	43.3–61.5	68.3656

High Grade dysplasia Vs Low Grade/Benign/Normal	VGG16	77.3	67.7–85.2	61.3	52.1–69.9	68.3432
	MobileNetV2	65.0	54.6–74.4	79.8	71.7–86.5	73.2884
	ResNet-50	94.9	88.4–98.3	48.4	39.3–57.5	68.8324
	ResNet-18	87.6	79.4–93.4	53.2	44.1–62.2	68.366
	GoogLeNet	92.8	85.7–97.0	49.2	40.1–58.3	68.3696
	AlexNet	80.4	71.1–87.8	62.1	52.9–70.7	70.1564
	InceptionV3	80.4	71.1–87.8	68.6	59.6–76.6	73.7684
	NASNetLarge	57.3	45.4–68.7	76.0	68.3–82.7	69.6907
	DenseNet-201	94.7	86.9–98.5	35.6	27.9–44.0	55.63795
	InceptionResNet-v2	82.7	72.2–90.4	68.5	60.3–75.9	73.29702
	Xception	92.0	83.4–97.0	58.9	50.5–67.0	70.1209
	ResNet-101	94.7	86.9–98.5	49.3	41.0–57.7	64.69365
	NASNetMobile	80.0	69.2–88.4	61.6	53.2–69.6	67.86404
	VGG19	96.0	88.8–99.2	37.7	29.8–46.1	57.44387
	VGG16	76.0	64.7–85.1	63.7	55.3–71.5	67.8697
	MobileNetV2	94.7	86.9–98.5	30.8	23.5–39.0	52.46515
	ResNet-50	45.3	33.8–57.3	87.7	81.2–92.5	73.31674
	ResNet-18	73.3	61.9–82.9	73.3	65.3–80.3	73.30356
	GoogLeNet	77.3	66.2–86.2	61.6	53.2–69.6	66.95891
	AlexNet	64.0	52.1–74.8	76.0	68.3–82.7	71.95183
	InceptionV3	90.7	81.7–96.2	43.8	35.6–52.3	59.71537

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