

TABLE 1: Comparative 3D shape classification results on the ModelNet10/40 benchmarks. Here, we only focus on point-based networks and the ‘#params’ means the number of parameters of corresponding model. The ‘OA’ represents overall accuracy and the ‘mAcc’ represents mean accuracy in the table. The symbol ‘-’ means the results are unavailable.

Methods		Input	#params (M)	ModelNet40 (OA)	ModelNet40 (mAcc)	ModelNet10 (OA)	ModelNet10 (mAcc)
Pointwise MLP Networks	PointNet [5]	Coordinates	3.48	89.2%	86.2%	-	-
	PointNet++ [27]	Coordinates	1.48	90.7%	-	-	-
	MO-Net [30]	Coordinates	3.1	89.3%	86.1%	-	-
	Deep Sets [26]	Coordinates	-	87.1%	-	-	-
	PAT [29]	Coordinates	-	91.7%	-	-	-
	PointWeb [31]	Coordinates	-	92.3%	89.4%	-	-
	SRN-PointNet++ [32]	Coordinates	-	91.5%	-	-	-
Convolution-based Networks	JUSTLOOKUP [33]	Coordinates	-	89.5%	86.4%	92.9%	92.1%
	Pointwise-CNN [49]	Coordinates	-	86.1%	81.4%	-	-
	PointConv [38]	Coordinates+Normals	-	92.5%	-	-	-
	MC Convolution [39]	Coordinates	-	90.9%	-	-	-
	SpiderCNN [40]	Coordinates+Normals	-	92.4%	-	-	-
	PointCNN [52]	Coordinates	0.45	92.2%	88.1%	-	-
	Flex-Convolution [48]	Coordinates	-	90.2%	-	-	-
	PCNN [41]	Coordinates	1.4	92.3%	-	94.9%	-
	Boulch [36]	Coordinates	-	91.6%	88.1%	-	-
	RS-CNN [35]	Coordinates	-	92.6%	-	-	-
	Spherical CNNs [43]	Coordinates	0.5	88.9%	-	-	-
	GeoCNN [51]	Coordinates	-	93.4%	91.1%	-	-
	Ψ -CNN [50]	Coordinates	-	92.0%	88.7%	94.6%	94.4%
	A-CNN [55]	Coordinates	-	92.6%	90.3%	95.5%	95.3%
	SFCNN [57]	Coordinates	-	91.4%	-	-	-
	SFCNN [57]	Coordinates+Normals	-	92.3%	-	-	-
	DensePoint [37]	Coordinates	0.53	93.2%	-	96.6%	-
	KPConv rigid [42]	Coordinates	-	92.9%	-	-	-
	KPConv deform [42]	Coordinates	-	92.7%	-	-	-
	InterpCNN [53]	Coordinates	12.8	93.0%	-	-	-
Graph-based Networks	ConvPoint [47]	Coordinates	-	91.8%	88.5%	-	-
	ECC [58]	Coordinates	-	87.4%	83.2%	90.8%	90.0%
	KCNet [66]	Coordinates	0.9	91.0%	-	94.4%	-
	DGCNN [60]	Coordinates	1.84	92.2%	90.2%	-	-
	LocalSpecGCN [75]	Coordinates+Normals	-	92.1%	-	-	-
	RGCNN [72]	Coordinates+Normals	2.24	90.5%	87.3%	-	-
	LDGCNN [61]	Coordinates	-	92.9%	90.3%	-	-
	3DTI-Net [77]	Coordinates	2.6	91.7%	-	-	-
	PointGCN [76]	Coordinates	-	89.5%	86.1%	91.9%	91.6%
	ClusterNet [68]	Coordinates	-	87.1%	-	-	-
	Hassani et al. [64]	Coordinates	-	89.1%	-	-	-
	DPAM [65]	Coordinates	-	91.9%	89.9%	94.6%	94.3%
Data Indexing-based Networks	KD-Net [78]	Coordinates	2.0	91.8%	88.5%	94.0%	93.5%
	SO-Net [80]	Coordinates	-	90.9%	87.3%	94.1%	93.9%
	SCN [81]	Coordinates	-	90.0%	87.6%	-	-
	A-SCN [81]	Coordinates	-	89.8%	87.4%	-	-
	3DContextNet [79]	Coordinates	-	90.2%	-	-	-
	3DContextNet [79]	Coordinates+Normals	-	91.1%	-	-	-
Other Networks	3DmFV-Net [82]	Coordinates	4.6	91.6%	-	95.2%	-
	PVNet [83]	Coordinates+Views	-	93.2%	-	-	-
	PVRNet [84]	Coordinates+Views	-	93.6%	-	-	-
	3DPointCapsNet [85]	Coordinates	-	89.3%	-	-	-
	DeepRBFNet [86]	Coordinates	3.2	90.2%	87.8%	-	-
	DeepRBFNet [86]	Coordinates+Normals	3.2	92.1%	88.8%	-	-
	Point2Sequences [87]	Coordinates	-	92.6%	90.4%	95.3%	95.1%
	RCNet [88]	Coordinates	-	91.6%	-	94.7%	-
	RCNet-E [88]	Coordinates	-	92.3%	-	95.6%	-