Table 3. S^3: **3D Rotation estimation with quaternions.** Comparison on newly established ModelNet10-SO3. Adding our S^3_{exp} spherical regression on top of an AlexNet or VGG16 backbone network leads to best accuracy.

	MedErr↓	Acc@$\frac{\pi}{6}$↑	Acc@$\frac{\pi}{12}$↑	Acc@$\frac{\pi}{24}$↑
AlexNet (Direct+smooth-L1)	46.1	32.5	11.2	2.5
AlexNet + S_{flat}	33.3	53.5	34.1	13.9
AlexNet + S^3_{exp}	**25.3**	**65.4**	**48.5**	**24.4**
VGG16 (Direct+smooth-L1)	36.8	46.7	29.4	13.4
VGG16 + S_{flat}	25.9	63.5	48.7	29.5
VGG16 + S^3_{exp}	**20.3**	**70.9**	**58.9**	**38.4**