Performance_table

Models/Parameters	UNet	MobileNet-V1	MobileNet-V2	MobileNet-V3 (Small)	MobileNet-V3 (Large)	Cascaded MobileNet-V3 (Large)	BoxUNet	MobileNet-V3 (Large) Without SE	MobileNet-V3 (Small) Without SE
Train-Loss	0.016928	0.017593	0.019092	0.022031	0.019694	0.018917	0.017427	0.019806	0.022381
Valid-Loss	0.023493	0.021142	0.020737	0.022219	0.020956	0.020834	0.022476	0.021053	0.023226
Train-Dice Score	0.930613	0.928733	0.923372	0.915181	0.920789	0.92379	0.929041	0.920537	0.912956
Valid-Dice Score	0.913134	0.919553	0.915911	0.912283	0.918559	0.919511	0.913301	0.916606	0.911478
Train-Dice Score (Necrotic_Core)	0.899661	0.898819	0.892237	0.878691	0.886206	0.89089	0.896357	0.886411	0.876432
Valid-Dice Score (Necrotic_Core)	0.878466	0.885718	0.881008	0.876533	0.883214	0.882883	0.882621	0.88273	0.873962
Train-Dice Score (Peritumoral_Edema)	0.899786	0.891865	0.886555	0.873968	0.882031	0.88726	0.899005	0.882894	0.869342
Valid-Dice Score (Peritumoral_Edema)	0.866818	0.873109	0.874979	0.867599	0.879008	0.881126	0.863432	0.874988	0.865933
Train-Dice Score (GDEnhancing_Tumor)	0.930472	0.927966	0.923695	0.915746	0.918669	0.921984	0.928544	0.921943	0.914505
Valid-DiceScore (GDEnhancing_Tumor)	0.914472	0.918312	0.921804	0.910108	0.920604	0.922224	0.91245	0.919098	0.908681
Train-Jaccard Score	0.90534	0.903231	0.897277	0.887424	0.894548	0.897742	0.903604	0.894148	0.885325
Valid-Jaccard Score	0.886459	0.893505	0.889387	0.884681	0.891781	0.892996	0.886507	0.890228	0.883373
Train-Jaccard Score (Necrotic_Core)	0.87127	0.870353	0.863547	0.848613	0.85742	0.862205	0.867704	0.857152	0.846563
Valid-Jaccard Score (Necrotic_Core)	0.849755	0.857281	0.851812	0.846339	0.853689	0.853425	0.853262	0.854058	0.843155
Train-Jaccard Score (Peritumoral_Edema)	0.855775	0.84719	0.840389	0.825396	0.835474	0.841495	0.854683	0.83677	0.820699
Valid-Jaccard Score (Peritumoral_Edema)	0.818896	0.826312	0.828615	0.819321	0.812007	0.834819	0.816063	0.828078	0.817039
Train-Jaccard Score (GDEnhancing_Tumor)	0.905428	0.902024	0.897416	0.888138	0.89223	0.895901	0.90274	0.895592	0.887375
Valid-Jaccard Score (GDEnhancing_Tumor)	0.888116	0.892272	0.896449	0.882419	0.892812	0.896187	0.885665	0.893633	0.879778
Train-Sensitivity	0.937112	0.934828	0.929826	0.922561	0.928621	0.929845	0.935558	0.92841	0.921614
Valid-Sensitivity	0.925402	0.929305	0.928129	0.923564	0.924431	0.928245	0.92888	0.923694	0.917396
Train-Sensitivity (Necrotic_Core)	0.903355	0.90372	0.896562	0.883855	0.892789	0.894532	0.902554	0.892574	0.884095
Valid-Sensitivity (Necrotic_Core)	0.887372	0.890617	0.889388	0.884788	0.885667	0.884485	0.892864	0.883112	0.882603
Train-Sensitivity (Peritumoral_Edema)	0.906443	0.896283	0.891107	0.880828	0.88931	0.892523	0.904662	0.888934	0.877873
Valid-Sensitivity (Peritumoral_Edema)	0.876344	0.895221	0.892411	0.883438	0.887798	0.890404	0.894128	0.89025	0.87045
Train-Sensitivity (GDEnhancing_Tumor)	0.93762	0.933877	0.930124	0.923077	0.92697	0.92765	0.935699	0.929627	0.92396
Valid-Sensitivity (GDEnhancing_Tumor)	0.926826	0.92766	0.932768	0.924558	0.925721	0.931411	0.92799	0.927131	0.914355
Train-Specificity	0.982585	0.980677	0.979638	0.977526	0.979377	0.979879	0.982323	0.979095	0.976831
Valid-Specificity	0.976523	0.978698	0.980233	0.977548	0.978168	0.979689	0.97922	0.977751	0.975139
Train-Specificity (Necrotic_Core)	0.99902	0.998971	0.99886	0.998727	0.99881	0.998871	0.998953	0.998839	0.998679
Valid-Specificity (Necrotic_Core)	0.998947	0.998953	0.998784	0.998718	0.998909	0.998865	0.998759	0.998929	0.998747
Train-Specificity (Peritumoral_Edema)	0.997379	0.997379	0.997165	0.996786	0.997052	0.997179	0.997313	0.997066	0.996749
Valid-Specificity (Peritumoral_Edema)	0.997024	0.996416	0.99677	0.996252	0.996675	0.996836	0.99599	0.996315	0.997012
Train-Specificity (GDEnhancing_Tumor)	0.982439	0.98034	0.97931	0.978037	0.978568	0.979066	0.982229	0.979738	0.977622
Valid-Specificity (GDEnhancing_Tumor)	0.978118	0.977641	0.980877	0.978388	0.978647	0.980273	0.977917	0.978609	0.974717

Model Training Params	Values
PyTorch Version	2.3.1
Python	3.12.0
GPU	NVIDIA RTX A4000 (16 G)
CUDA	12.2
Learning Rate	0.001
Optimizer	[Adam, AdamW, RMSProp, SGD]
Loss	Cross Entropy
Epochs	100
Batch Size	16
Input Size	128 × 128 × 4
Output Size	128 × 128 × 4