Bi-PointFlowNet

8차 보고

0. Cross Bi-directional Hint Loss

Epoch: 350 EPE3D=0.0414

Teacher Model

Student Model
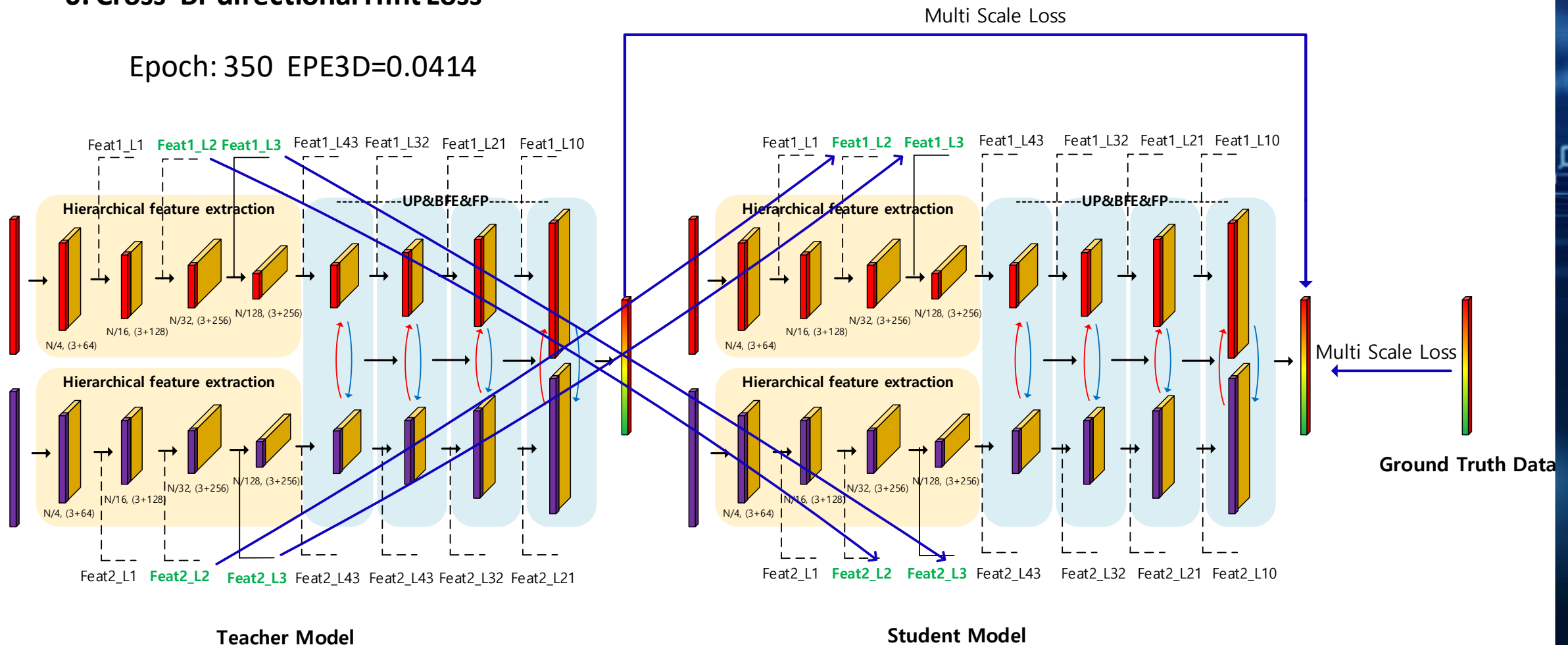
Experiment – WeightNet8 $(C_{mid}=8,\ K=16)$

	Baseline	Weightnet=8
FLOPs	13.3G	9.36G(30%↓)
Param	7.98M	4.47M(43%↓)

Baseline

Dataset	EPE3D(↓)	ACC3DS(↑)	ACC3DR(↑)	Outliers3D(↓)	EPE2D(↓)	ACC2D(↑)
FlyingThings	0.0288m	0.918	0.978	0.143	1.582	0.930
KITTI	0.0302m	0.920	0.962	0.136	1.061	0.948

WeightNet8(C_{mid}=8, K=16)

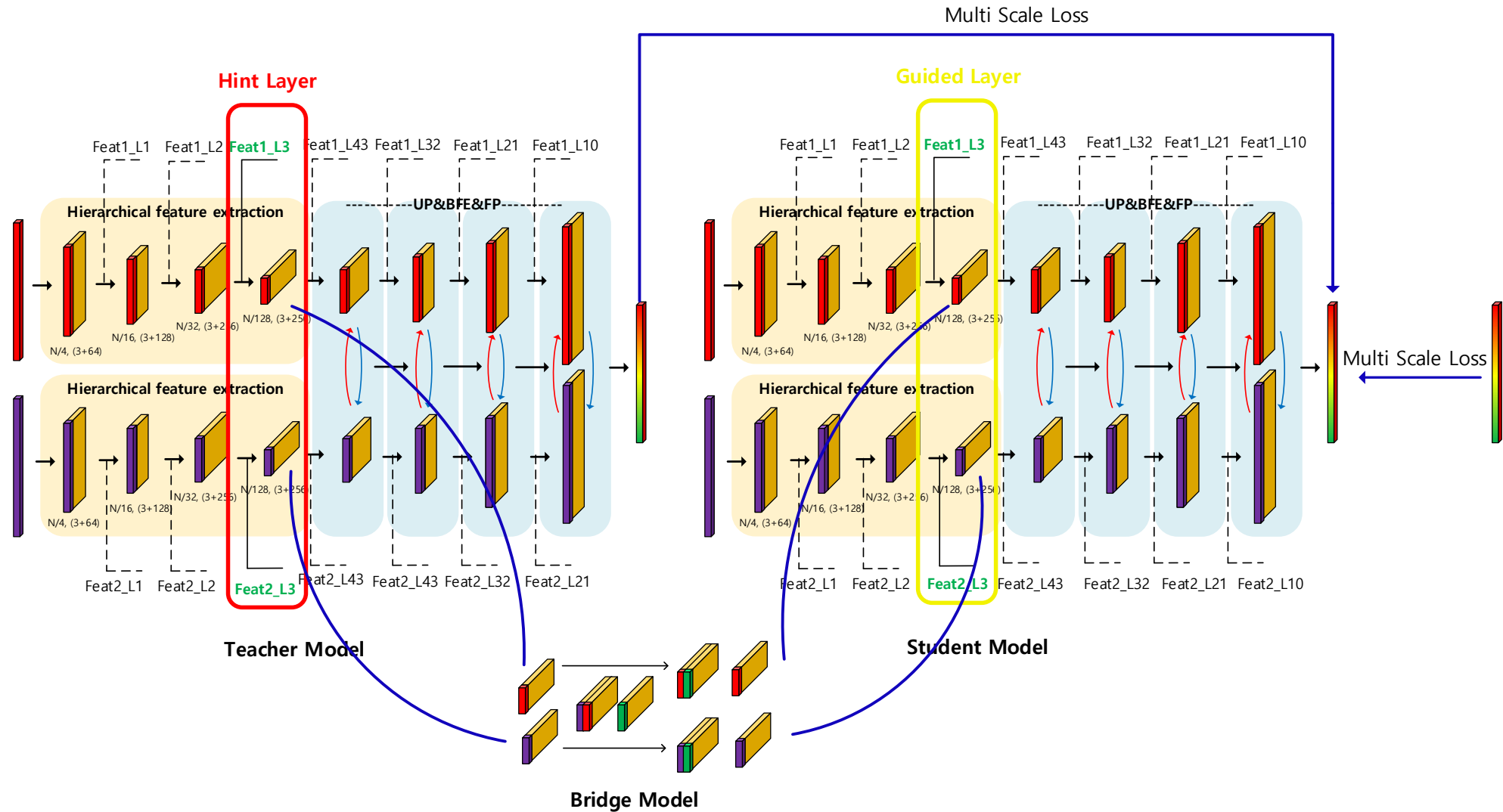| Loss Function	Dataset	EPE3D(↓)	ACC3DS(↑)	ACC3DR(↑)	Outliers3D(↓)	EPE2D(↓)	ACC2D(↑)
Scratch	FlyingThings	0.0287m(0.0280)	0.921(0.923)	0.979(0.979)	0.139(0.137)	1.606	0.931
	KITTI	0.0284m(0.0294)	0.926(0.927)	0.968(0.962)	0.132(0.136)	1.026	0.952
Bi-Directional Hint Training Loss	FlyingThings	0.0282m	0.924	0.980	0.136	1.642	0.934
	KITTI	0.0292m	0.923	0.961	0.138	0.972	0.953
Bi-Directional Hint Training Loss + Scratch	FlyingThings	**0.0266m**	**0.932**	**0.982**	**0.129**	**1.492**	**0.941**
	KITTI	0.0286m	0.930	0.965	0.134	1.002	0.954

Bridge KD Hint Training - Overview
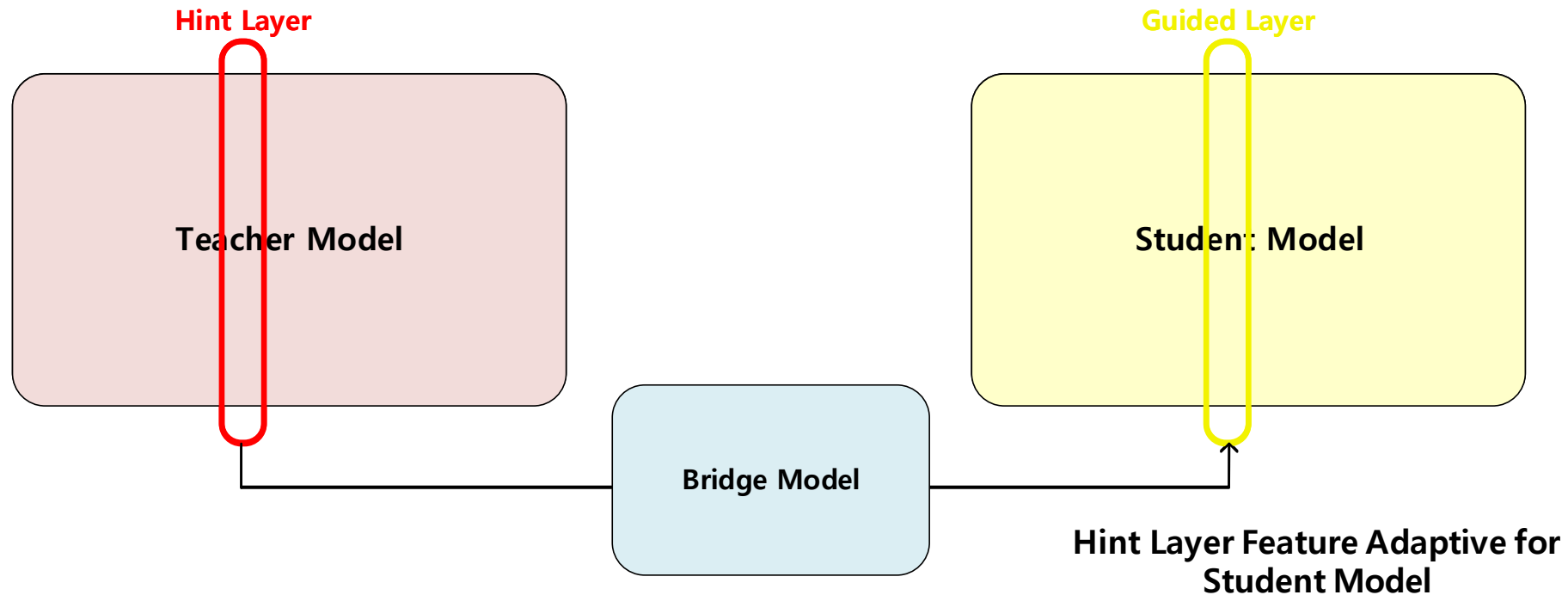
Bridge KD Hint Training – Bridge Model
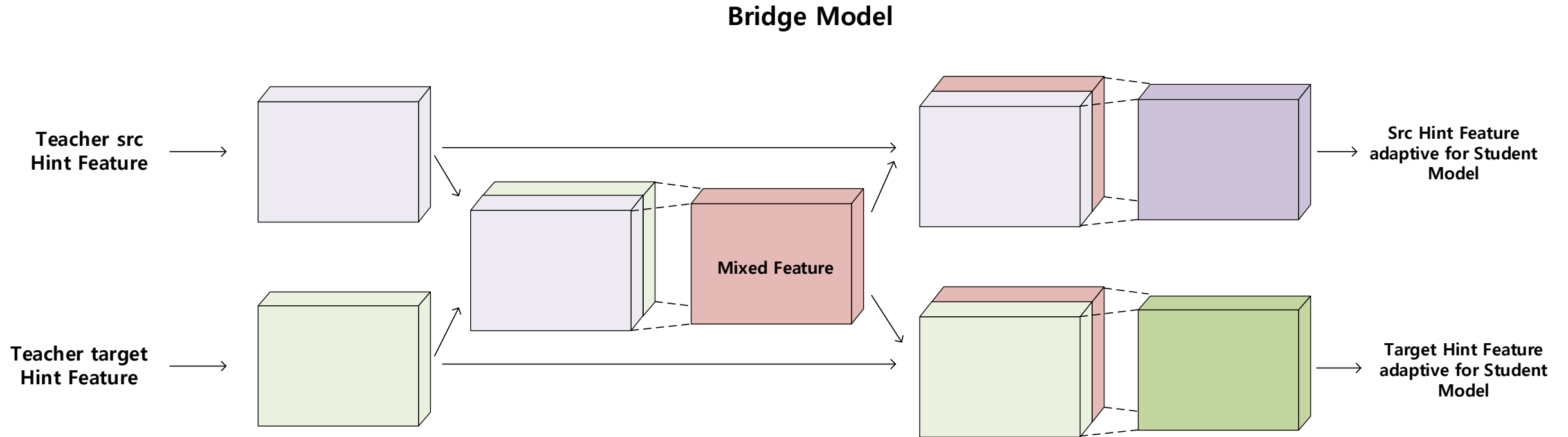
Bridge KD Hint Training - Architecture

Experiment – WeightNet4 $(C_{mid}=4,\ K=16)$

	Baseline	Weightnet=4
FLOPs	13.3G	7.37G(45%↓)
Param	7.98M	2.73M(66%↓)

Baseline

Dataset	EPE3D(↓)	ACC3DS(↑)	ACC3DR(↑)	Outliers3D(↓)	EPE2D(↓)	ACC2D(↑)
FlyingThings	0.0288m	0.918	0.978	0.143	1.582	0.930
KITTI	0.0302m	0.920	0.962	0.136	1.061	0.948

WeightNet4$(C_{mid}=4, K=16)$

Loss Function	Dataset	EPE3D(↓)	ACC3DS(↑)	ACC3DR(↑)	Outliers3D(↓)	EPE2D(↓)	ACC2D(↑)
Scratch	FlyingThings	0.0325m	0.902	0.974	0.163	1.833	0.915
	KITTI	0.0319m	0.923	0.964	0.140	1.118	0.949
Hint Training Loss	FlyingThings	0.0317m	0.905	0.975	0.159	1.755	0.917
	KITTI	0.0325m	0.929	0.961	0.137	1.136	0.946
Bi-Directional Hint Training Loss	FlyingThings	**0.0305m**	**0.910**	**0.977**	**0.155**	**1.667**	**0.923**
	KITTI	0.0360m	0.906	0.951	0.151	1.219	0.935
Bridge KD Hint Training Loss	FlyingThings	0.0306m	0.910	0.977	0.153	1.675	0.925
	KITTI	0.0350m	0.908	0.957	0.146	1.237	0.936