DEEP MULTI-SPECTRAL REGISTRATION USING INVARIANT DESCRIPTOR LEARNING

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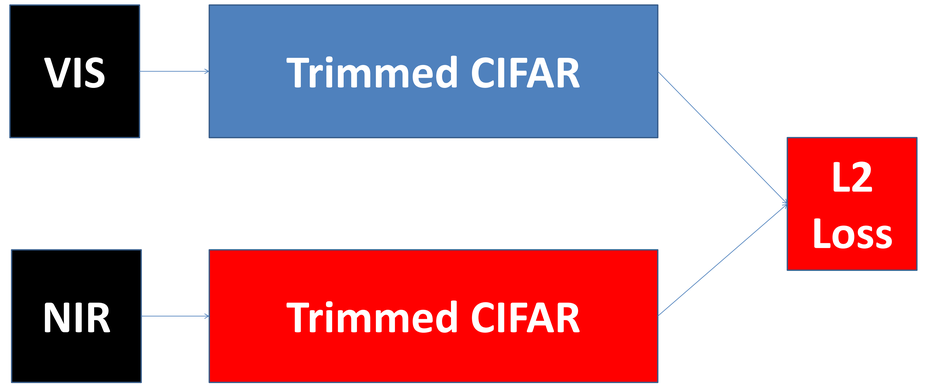
Visible

$0.4\mu m - 0.7\mu m$

Near-IR

$0.7\mu m - 2.5\mu m$

Metric Learning:

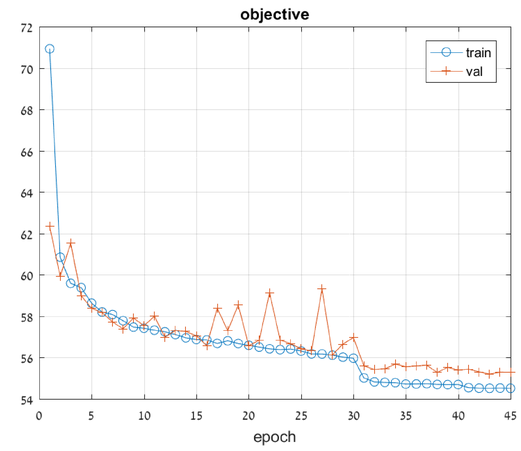


Deep multi-spectral registration outline:

1) Corner detection
2) Feature matching by a Deep Descriptor
3) Iterative RANSAC

Trimmed network trained on CIFAR-10:

Layer	Type	Output Dim	Kernel	Stride	Pad
1	convolution	32	5×5	1	2
2	max-pooling	32	3×3	2	0
3	ReLU	32	-	1	0
4	convolution	32	5×5	1	2
5	ReLU	32	-	1	0
6	avg-pooling	32	3×3	2	0
7	convolution	64	5×5	1	2
8	ReLU	64	-	1	0
9	avg-pooling	64	3×3	2	0
10	convolution	64	4×4	1	0



Algorithm	VIS-NIR
Our method	**0.03**
Edge-Descriptor	0.08
Canny	0.07
Sobel	0.07
Mutual Information	0.11
LGHD	0.21