

# Data Book

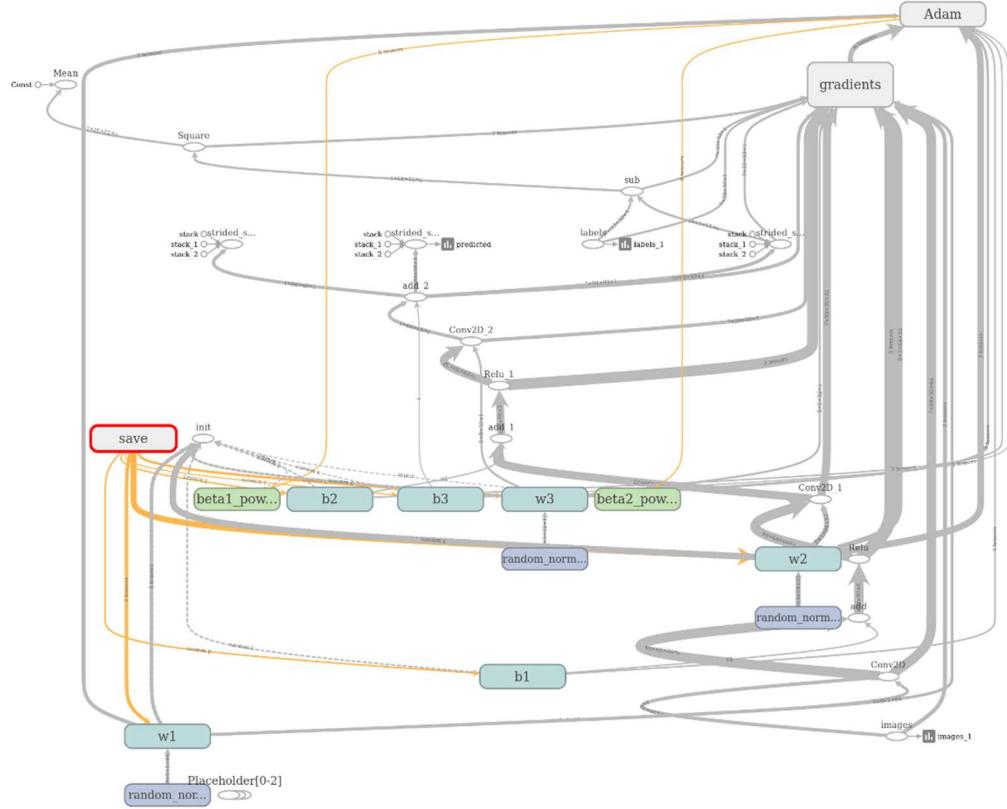
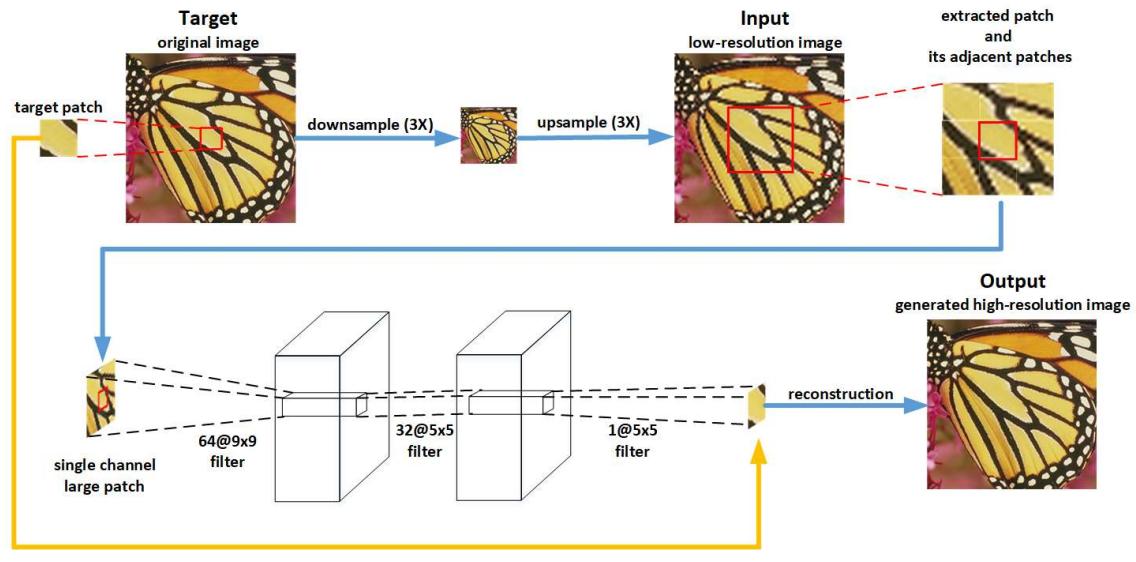
Context-Aware Medical Image  
Super-Resolution Using  
Convolutional Neural Networks

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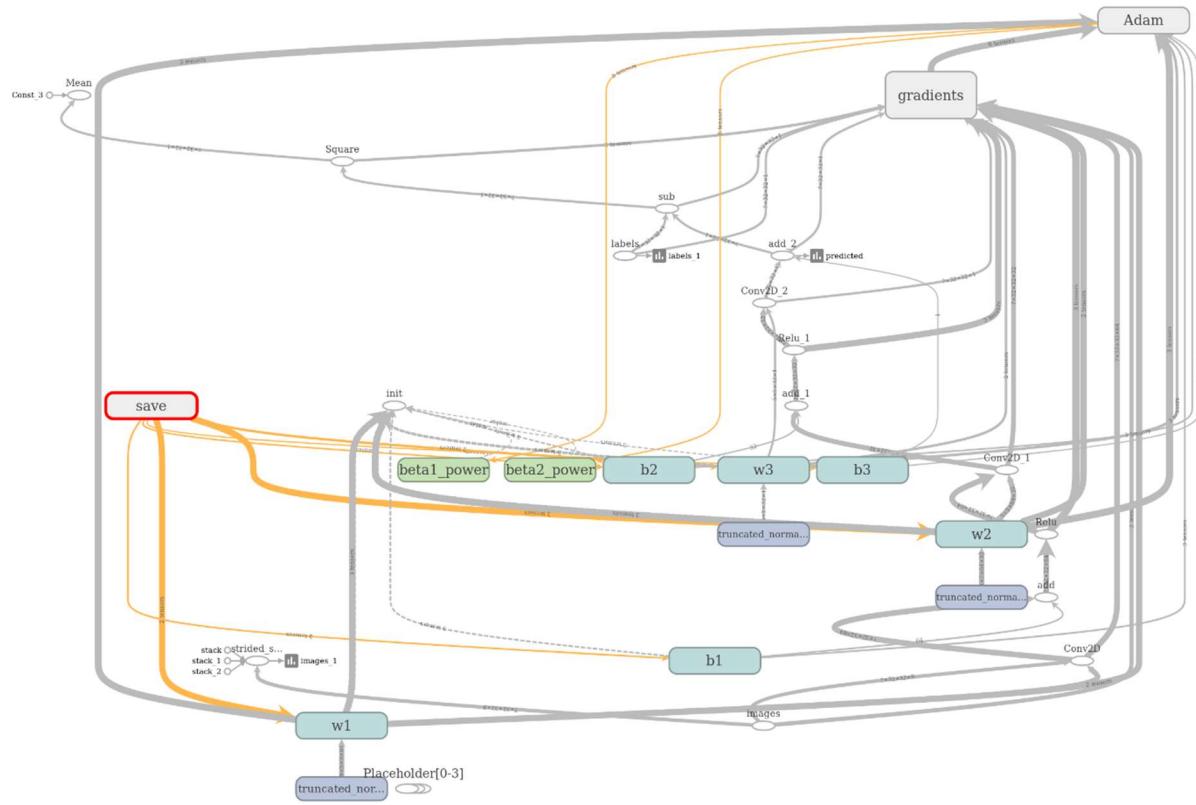
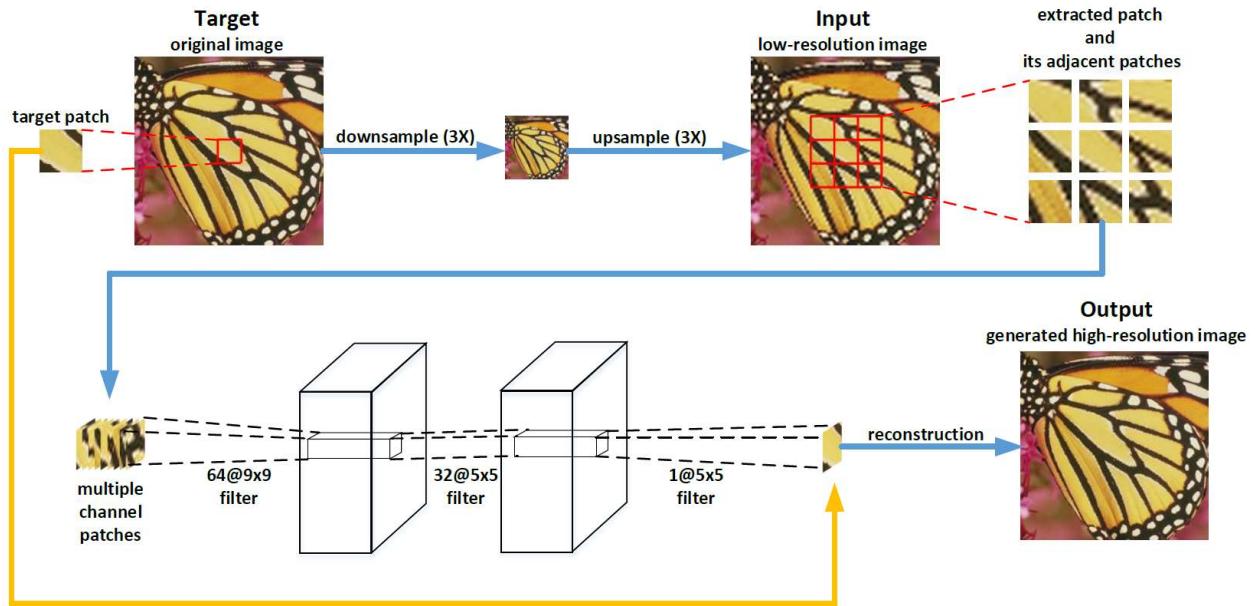
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# Architectures

## E-SRCNN

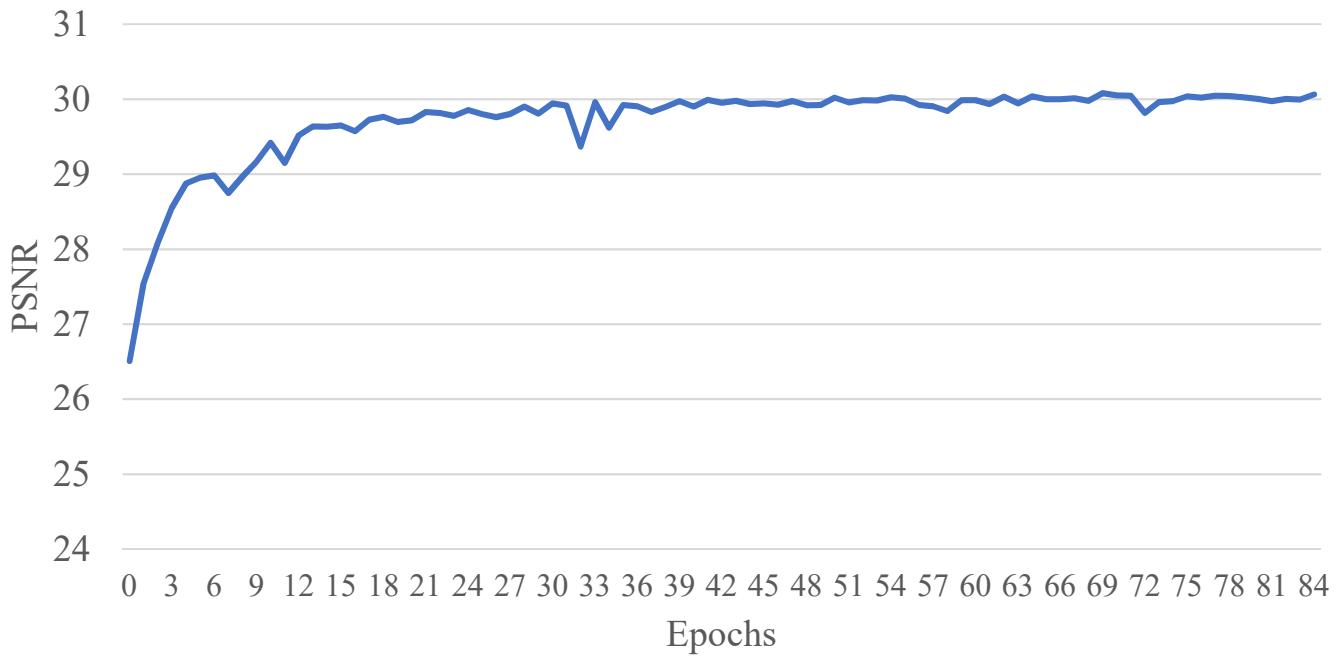


# C-SRCNN

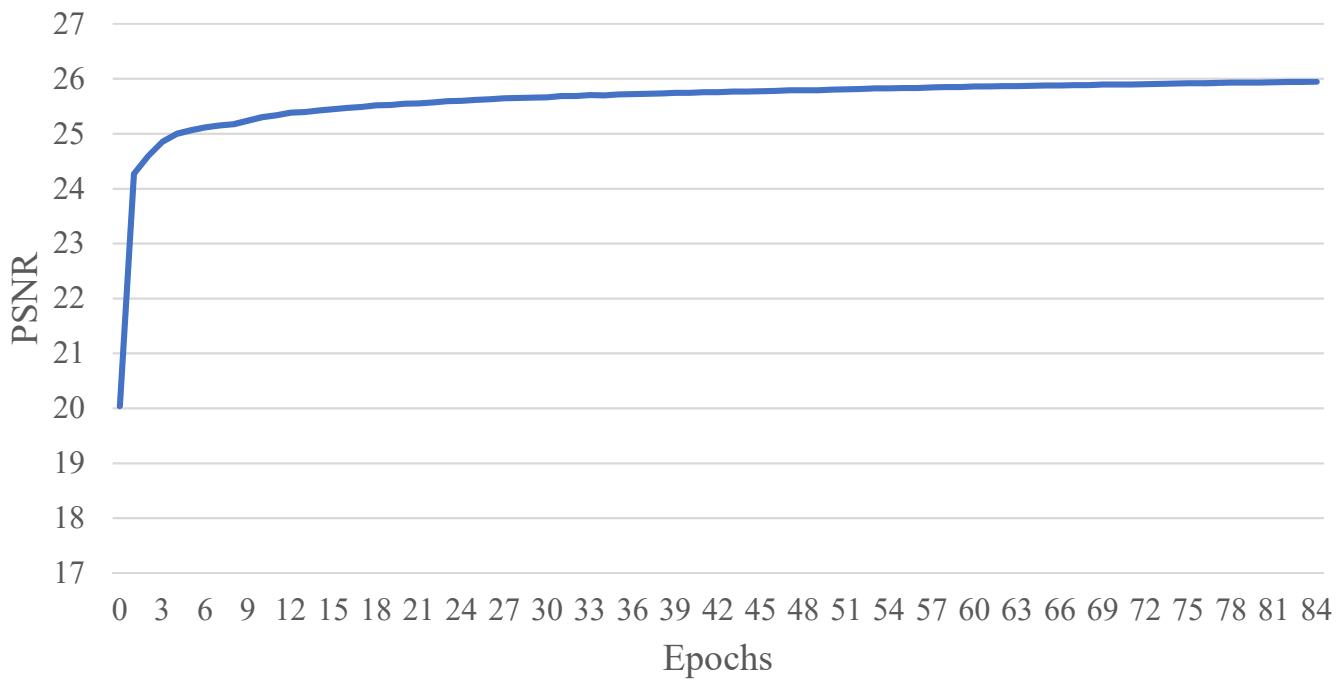


# Training (General 100 Dataset)

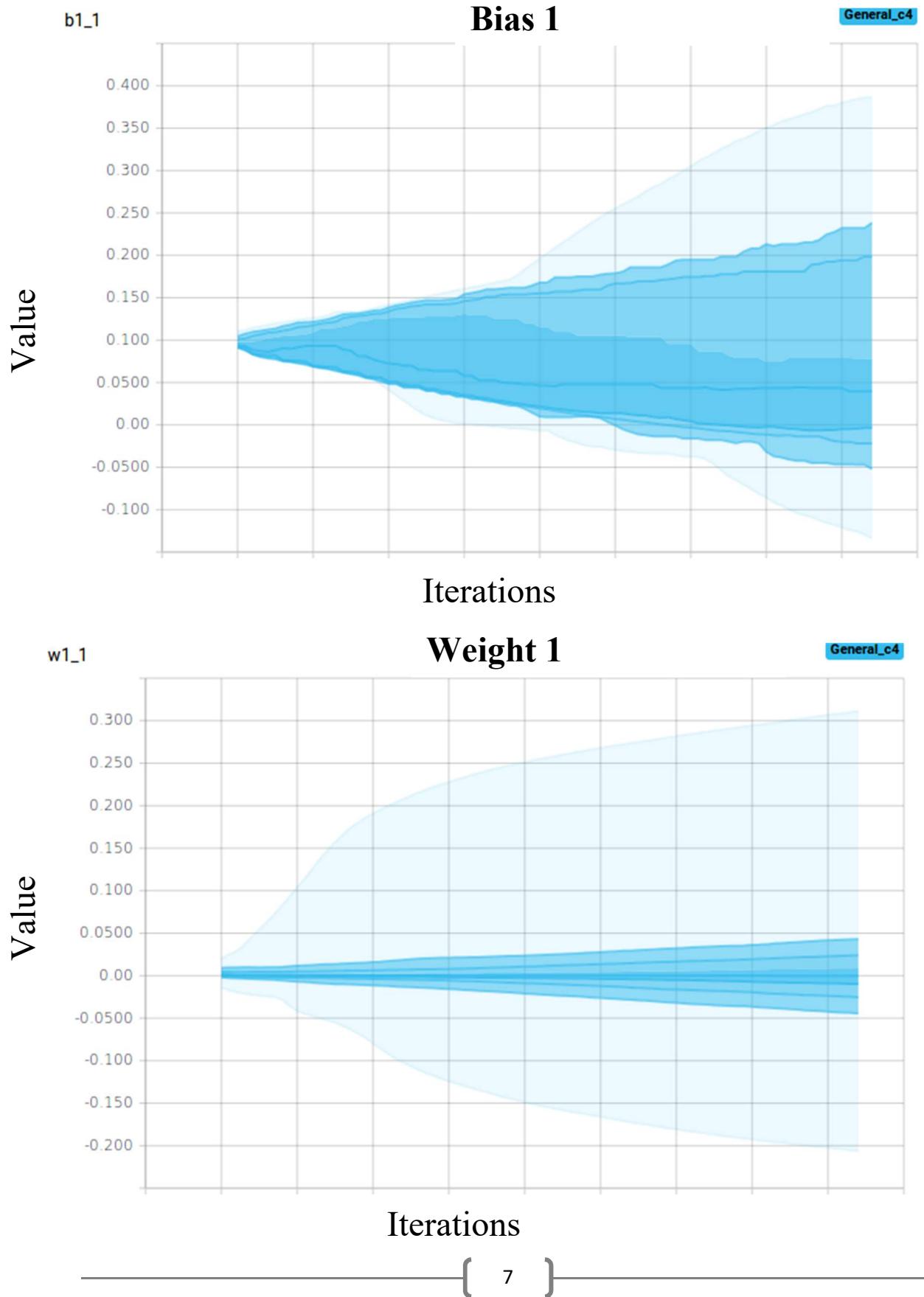
### 4 Neighbor C-SRCNN Validation Set PSNR on the General100 Dataset



### 4 Neighbor C-SRCNN Training Set PSNR on the General100 Dataset



# Distribution of Biases and Weights for 4 Neighbor C-SRCNN over Epochs (General 100)

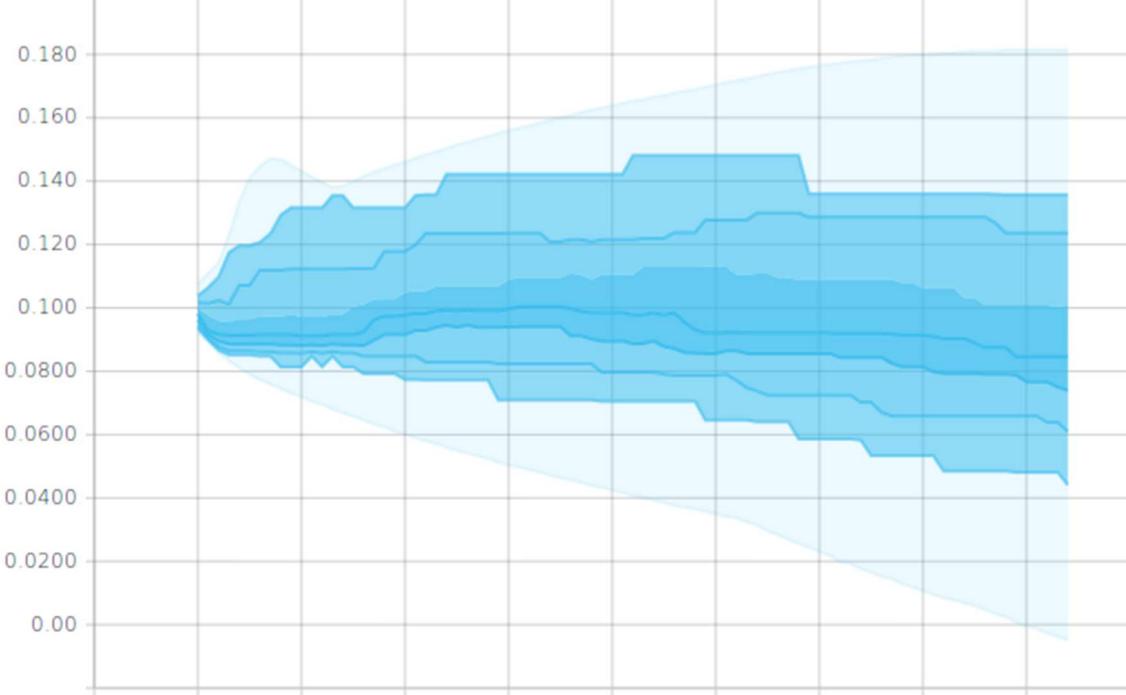


b2\_1

## Bias 2

General\_c4

Value

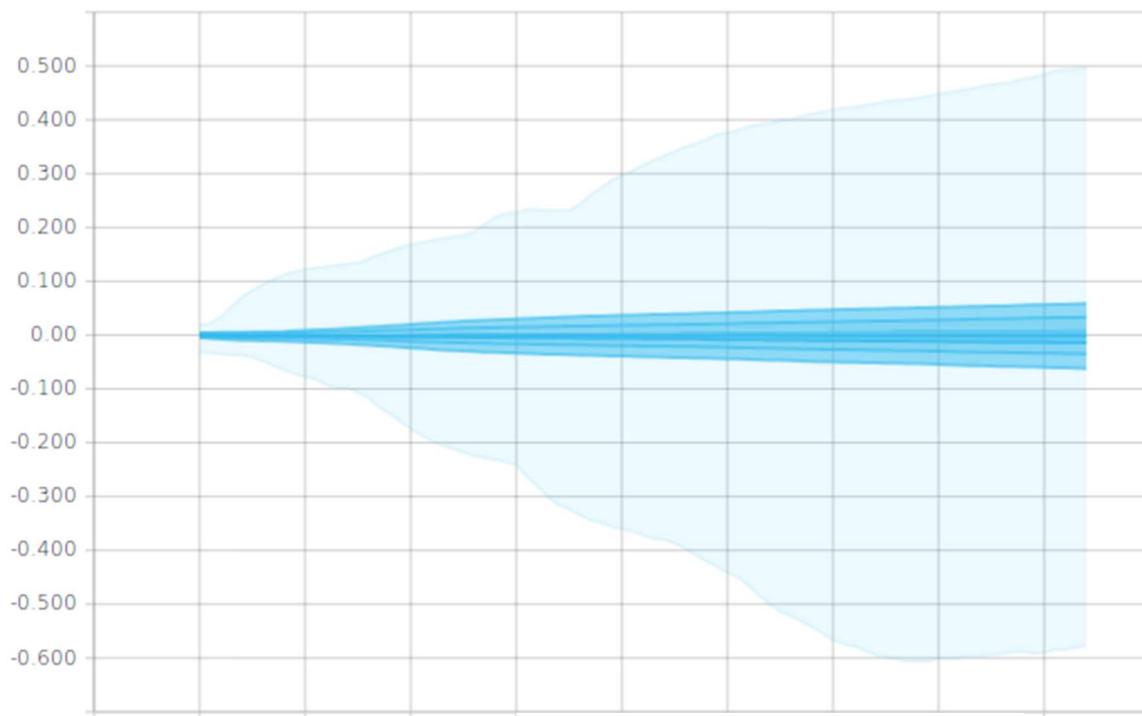


w2\_1

## Weight 2

General\_c4

Value



Iterations

b3\_1

## Bias 3

General\_c4

Value

0.100  
0.0900  
0.0800  
0.0700  
0.0600  
0.0500  
0.0400  
0.0300  
0.0200  
0.0100

Iterations

## Weight 3

w3\_1

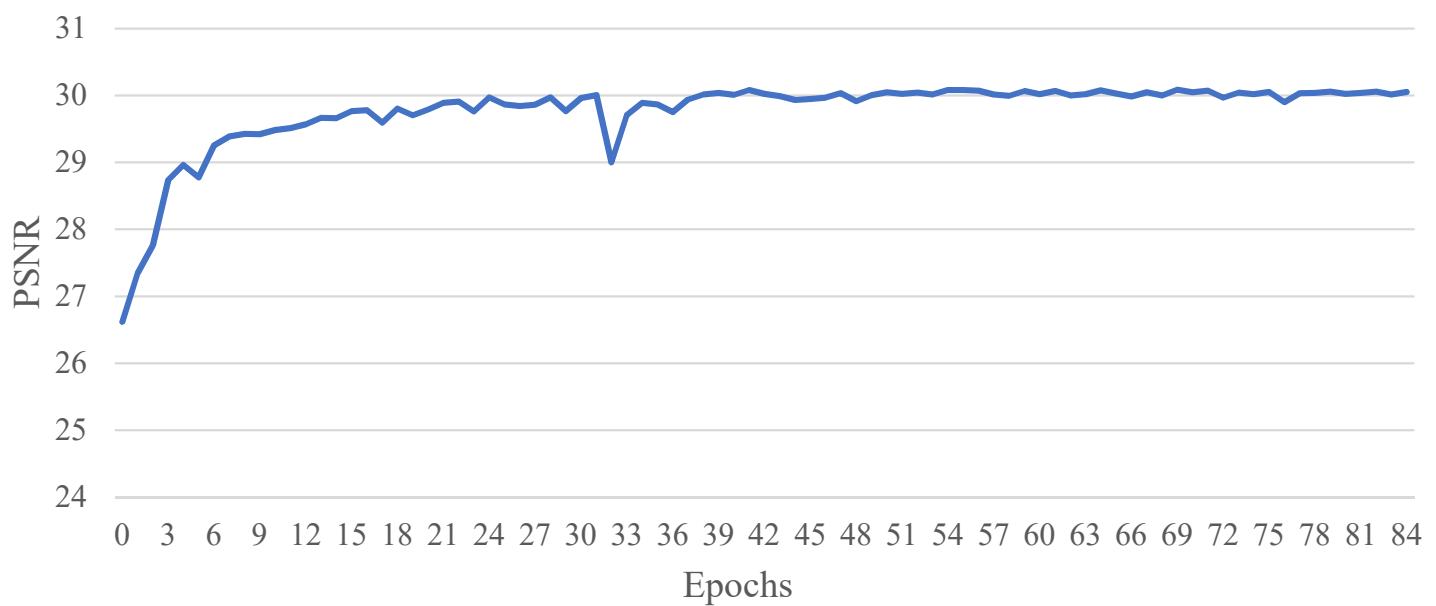
General\_c4

Value

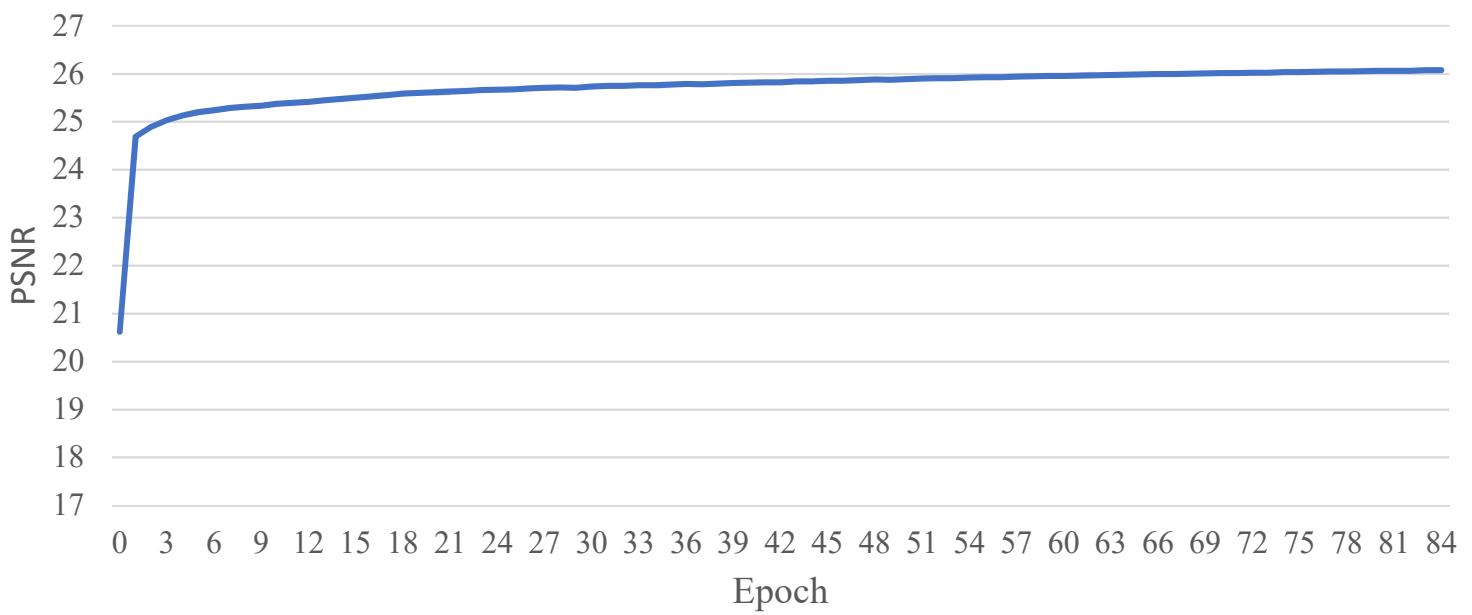
0.150  
0.100  
0.0500  
0.00  
-0.0500  
-0.100  
-0.150

Iterations

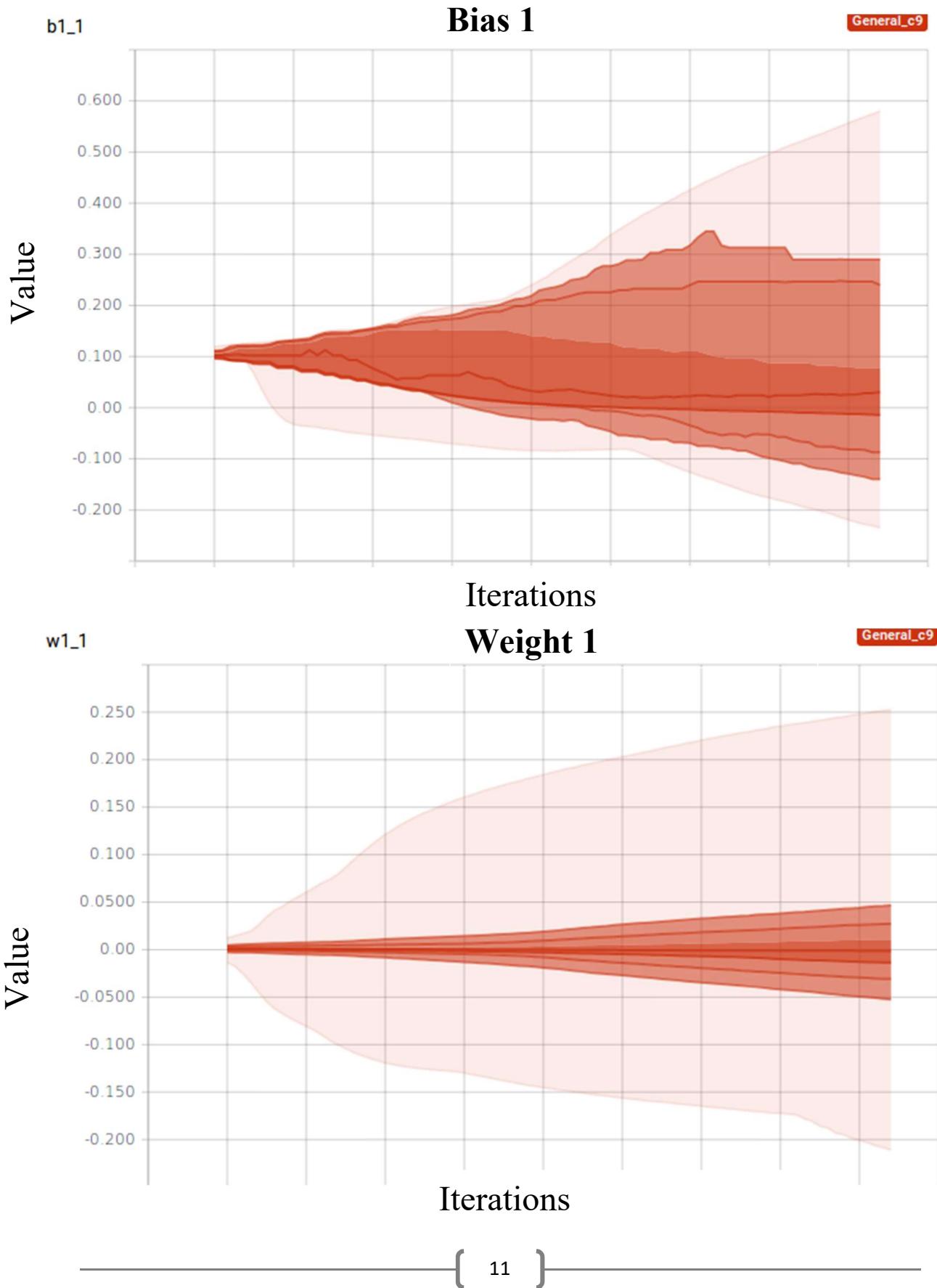
### 8 Neighbor C-SRCNN Validation Set PSNR on the General100 Dataset

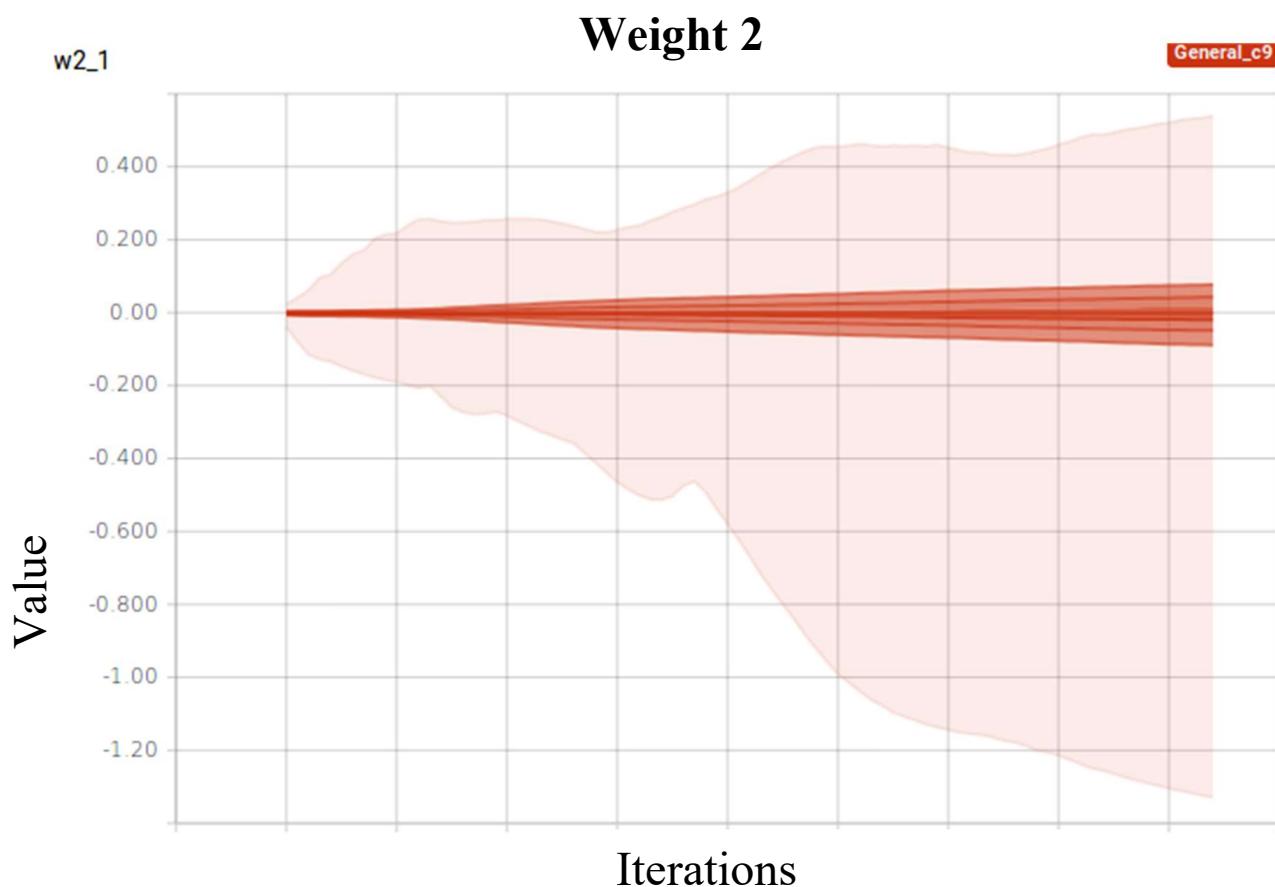
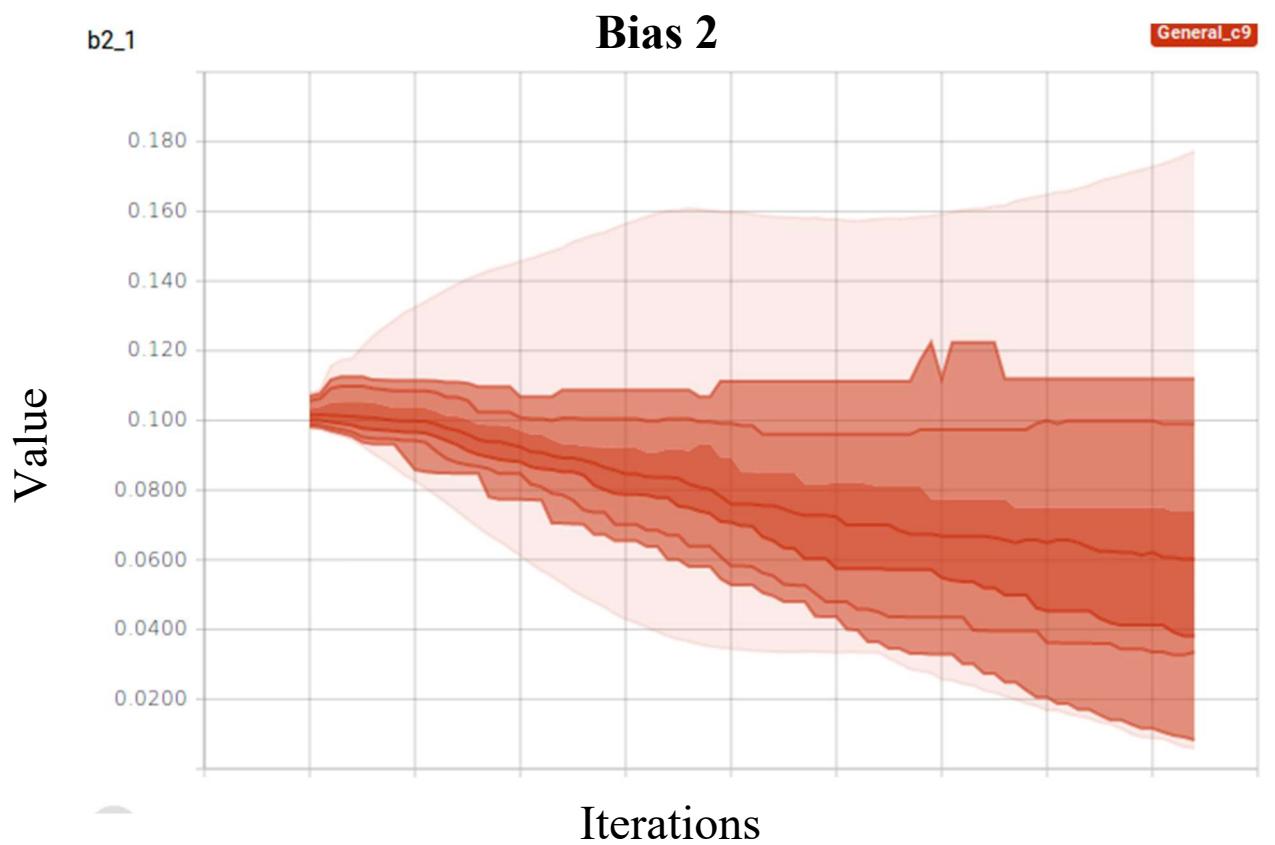


### 8 Neighbor C-SRCNN Training Set PSNR on the General100 Dataset



# Distribution of Biases and Weights for 8 Neighbor C-SRCNN over Epochs (General 100)



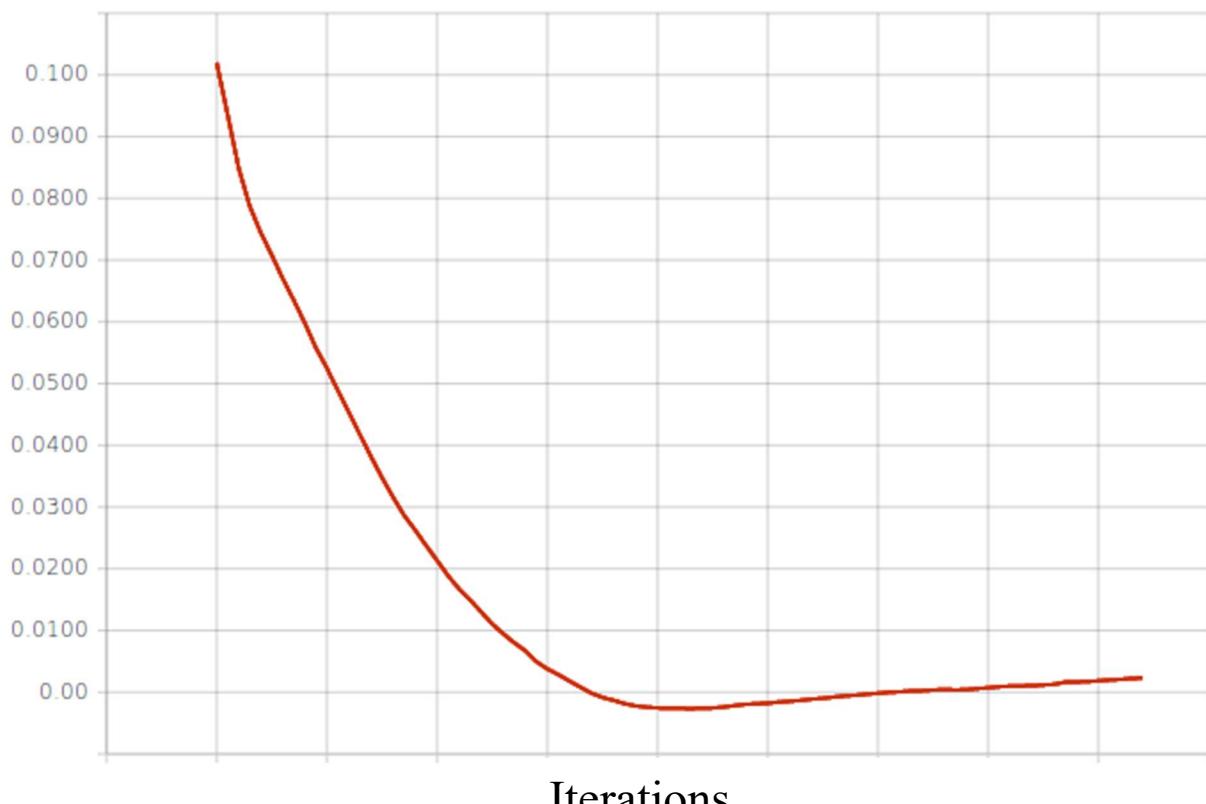


b3\_1

### Bias 3

General\_c9

Value

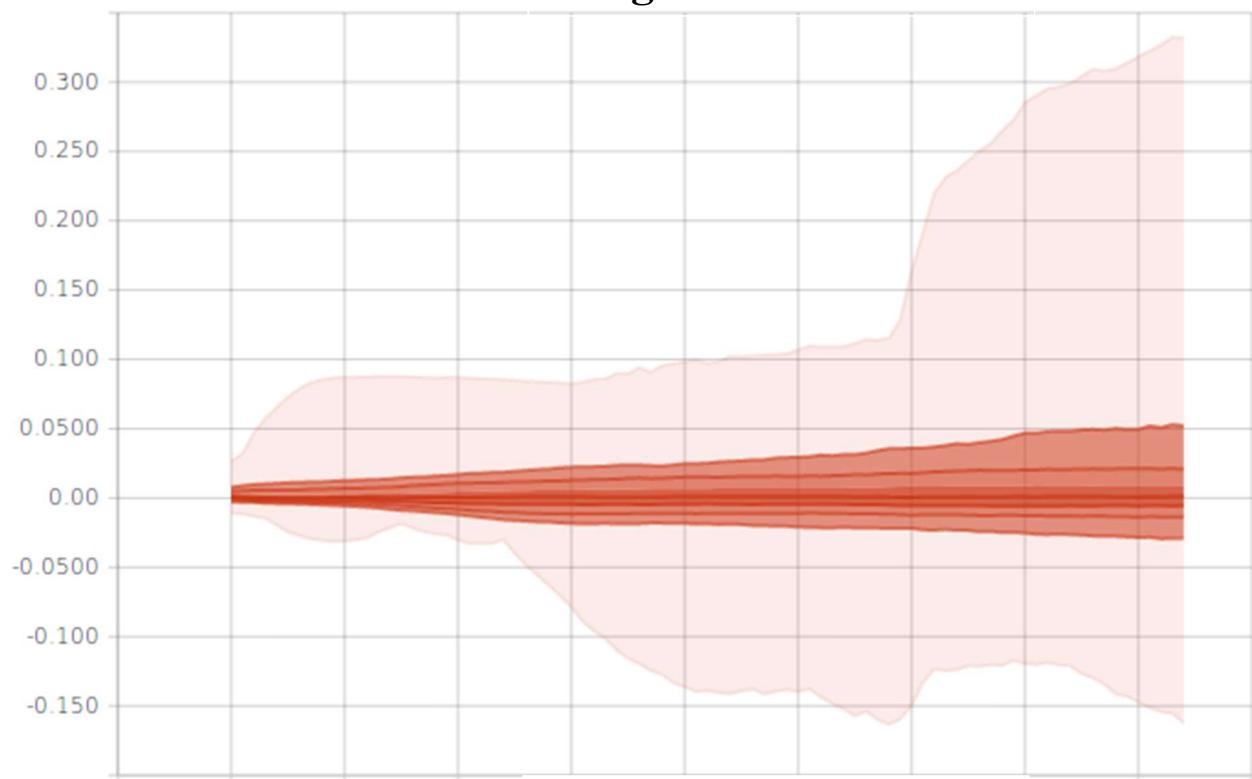


w3\_1

### Weight 3

General

Value



Iterations

{ 13 }

# Testing

## (Set 5 Dataset)

Original

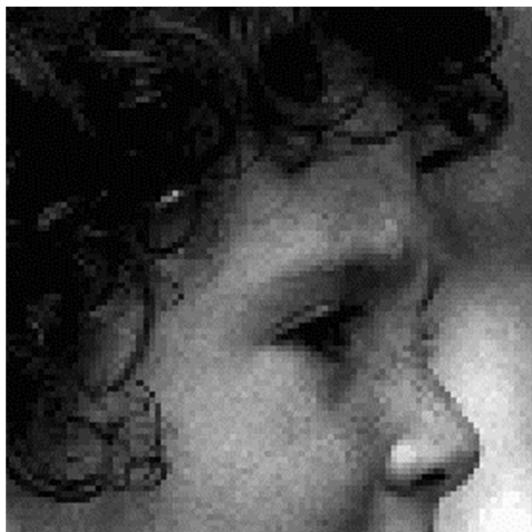


PSNR/SSIM

Results for head.bmp

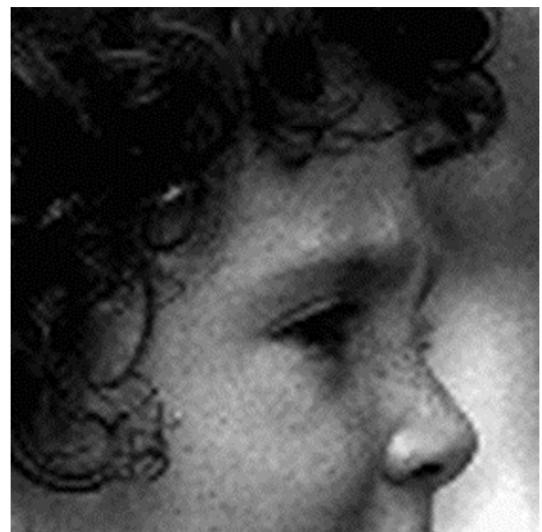
Method	PSNR	SSIM
Nearest Neighbor	27.58	0.6874
Bicubic	29.46	0.7326
SRCCN	31.24	0.8046
Extended Patch	31.12	0.8134
4 Neighbor	31.04	0.7996
8 Neighbor	<b>31.57</b>	<b>0.8049</b>

Nearest Neighbor



27.58/0.6874

Bicubic



29.46/0.7326

SRCNN



31.24/0.8046

E- SRCNN (Ours)



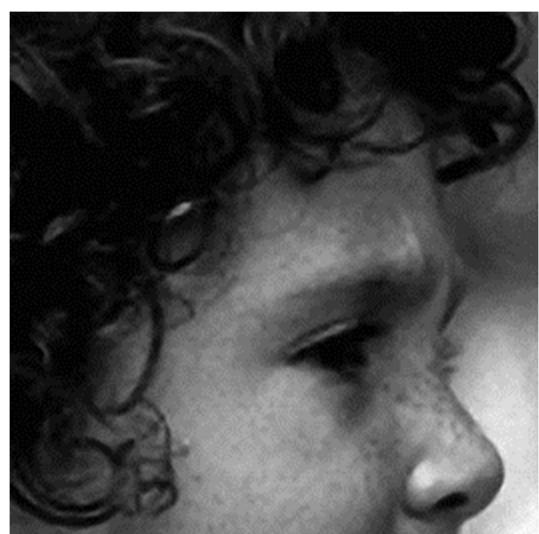
31.12/0.8134

C5 C-SRCNN (Ours)



31.04/0.7996

C9 C-SRCNN (Ours)



**31.57/0.8049**

Original



PSNR/SSIM

Results for bird.bmp

Method	PSNR	SSIM
Nearest Neighbor	25.84	0.8273
Bicubic	28.50	0.8681
SRCNN	31.73	0.9377
Extended Patch	31.50	0.9315
4 Neighbor	32.17	0.9348
8 Neighbor	<b>32.37</b>	<b>0.9396</b>

Nearest Neighbor



25.84/0.8273

Bicubic



28.50/0.8681

SRCNN



31.73/0.9377

E- SRCNN (Ours)



31.50/0.9315

C5 C-SRCNN (Ours)



32.17/0.9348

C9 C-SRCNN (Ours)



**32.37/0.9396**

Original

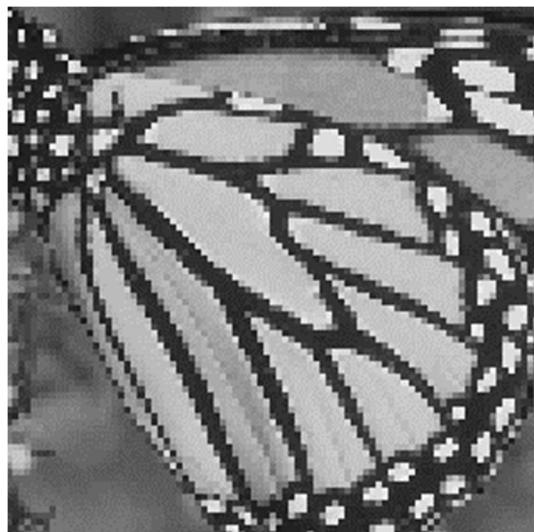


PSNR/SSIM

Results for butterfly.bmp

Method	PSNR	SSIM
Nearest Neighbor	18.31	0.7204
Bicubic	20.36	0.7320
SRCCNN	23.90	0.8660
Extended Patch	19.71	0.8337
4 Neighbor	24.24	0.8744
8 Neighbor	<b>24.39</b>	<b>0.8756</b>

Nearest Neighbor



18.31/0.7204

Bicubic



20.36/0.7320

SRCNN



23.90/0.8660

E- SRCNN (Ours)



19.71/0.8337

C5 C-SRCNN (Ours)



24.24/0.8744

C9 C-SRCNN (Ours)



**24.39/0.8756**

Original



PSNR/SSIM

Results for baby.bmp

Method	PSNR	SSIM
Nearest Neighbor	28.59	0.8479
Bicubic	29.26	0.8273
SRCCNN	<b>32.74</b>	<b>0.9080</b>
Extended Patch	32.22	0.9053
4 Neighbor	32.70	0.9055
8 Neighbor	32.68	0.9043

Nearest Neighbor



28.59/0.8479

Bicubic



29.26/0.8273

SRCNN



**32.74/0.9080**

E- SRCNN (Ours)



32.22/0.9053

C5 C-SRCNN (Ours)



32.70/0.9055

C9 C-SRCNN (Ours)

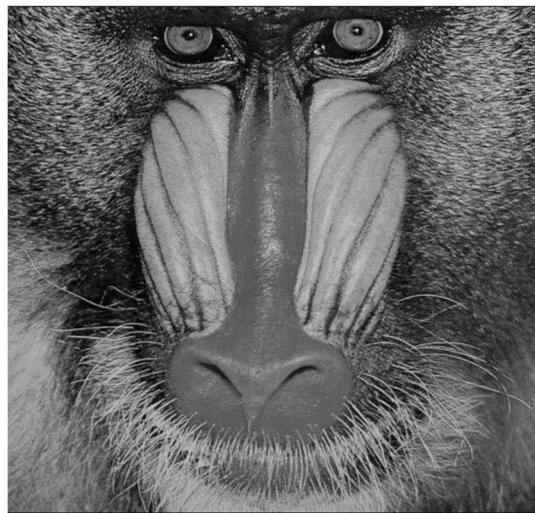


32.68/0.9043

# Testing

## (Set 14 Dataset)

Original

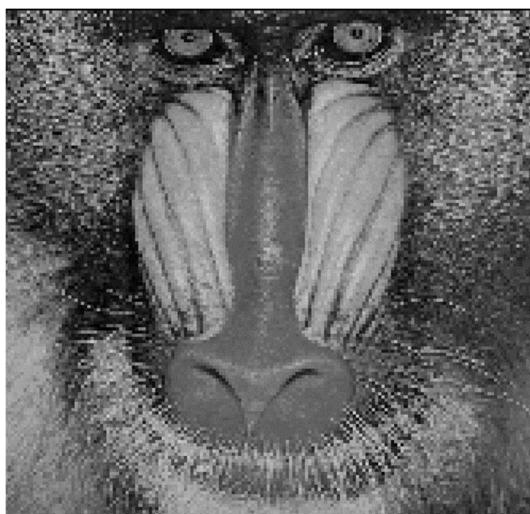


Results for baboon.bmp

Method	PSNR	SSIM
Nearest Neighbor	19.35	0.4844
Bicubic	<b>20.87</b>	0.4538
SRCNN	17.07	0.5849
Extended Patch	17.16	0.5066
4 Neighbor	16.34	0.5827
8 Neighbor	17.00	<b>0.5856</b>

PSNR/SSIM

Nearest Neighbor



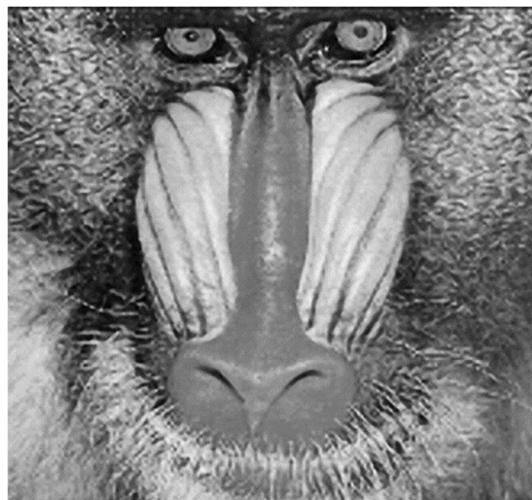
19.35/0.4844

Bicubic



**20.87/0.4538**

SRCNN



17.07/0.5849

E- SRCNN (Ours)



17.16/0.5066

C5 C-SRCNN (Ours)



16.34/0.5827

C9 C-SRCNN (Ours)



17.00/**0.5856**

Original



PSNR/SSIM

Results for barbara.bmp

Method	PSNR	SSIM
Nearest Neighbor	22.26	0.6978
Bicubic	23.66	0.6807
SRCCNN	<b>23.62</b>	<b>0.7623</b>
Extended Patch	23.17	0.7379
4 Neighbor	23.58	0.7598
8 Neighbor	23.40	0.7597

Nearest Neighbor



22.26/0.6978

Bicubic



23.66/0.6807

SRCNN



**23.62/0.7623**

E- SRCNN (Ours)



23.170.7379

C5 C-SRCNN (Ours)



23.58/0.7598

C9 C-SRCNN (Ours)



23.40/0.7597

Original



PSNR/SSIM

Results for bridge.bmp

Method	PSNR	SSIM
Nearest Neighbor	21.10	0.5874
Bicubic	22.88	0.5676
SRCNN	24.16	<b>0.7073</b>
Extended Patch	22.32	0.7041
4 Neighbor	<b>24.24</b>	0.7071
8 Neighbor	24.07	0.7069

Nearest Neighbor



21.10/0.5874

Bicubic



22.88/0.5676

SRCNN



24.16/**0.7073**

E- SRCNN (Ours)



22.32/0.7041

C5 C-SRCNN (Ours)



**24.24**/0.7071

C9 C-SRCNN (Ours)



24.07/0.7069

Original



PSNR/SSIM

Results for coastguard.bmp

Method	PSNR	SSIM
Nearest Neighbor	22.71	0.5874
Bicubic	23.93	0.5168
SRCNN	24.78	0.6262
Extended Patch	22.41	0.6199
4 Neighbor	<b>24.83</b>	0.6264
8 Neighbor	24.80	<b>0.6267</b>

Nearest Neighbor



22.71/0.5874

Bicubic



23.93/0.5168

SRCNN



E- SRCNN (Ours)



24.78/0.6262

22.41/0.6199

C5 C-SRCNN (Ours)



C9 C-SRCNN (Ours)



**24.83/0.6264**

0.2480/**0.6267**

Original



Results for comic.bmp

Method	PSNR	SSIM
Nearest Neighbor	18.26	0.6117
Bicubic	20.01	0.5908
SRCNN	21.84	0.7643
Extended Patch	18.26	0.7065
4 Neighbor	<b>21.92</b>	0.7670
8 Neighbor	21.87	<b>0.7671</b>

PSNR/SSIM

Nearest Neighbor



18.26/0.6117

Bicubic



20.01/0.5908

SRCNN



21.84/0.7643

E- SRCNN (Ours)



18.26/0.7065

C5 C-SRCNN (Ours)



**21.92/0.7670**

C9 C-SRCNN (Ours)



**21.87/0.7671**

Original



Results for flowers.bmp

PSNR/SSIM

Method	PSNR	SSIM
Nearest Neighbor	22.26	0.7067
Bicubic	23.54	0.7058
SRCNN	26.51	0.8271
Extended Patch	21.24	0.7817
4 Neighbor	26.56	0.8280
8 Neighbor	<b>26.57</b>	<b>0.8292</b>

Nearest Neighbor



Bicubic



22.26/0.7076

23.54/0.7058

SRCNN



E- SRCNN (Ours)



26.51/0.8271

21.24/0.7817

C5 C-SRCNN (Ours)



C9 C-SRCNN (Ours)



26.56/0.8280

**26.57/0.8292**

Original



PSNR/SSIM

Results for foreman.bmp

Method	PSNR	SSIM
Nearest Neighbor	25.36	0.8276
Bicubic	26.81	0.8547
SRCNN	30.28	0.9130
Extended Patch	23.06	0.9013
4 Neighbor	30.17	<b>0.9136</b>
8 Neighbor	<b>30.76</b>	0.9129

Nearest Neighbor



25.36/0.8273

Bicubic



26.81/0.8547

SRCNN



30.28/0.9130

E- SRCNN (Ours)



23.06/0.9013

C5 C-SRCNN (Ours)



**30.17/0.9136**

C9 C-SRCNN (Ours)



**30.76/0.9129**

Original



PSNR/SSIM

Results for lenna.bmp

Method	PSNR	SSIM
Nearest Neighbor	25.90	0.7521
Bicubic	27.57	0.7878
SRCCNN	<b>28.02</b>	0.8587
Extended Patch	26.10	0.8460
4 Neighbor	27.38	<b>0.8592</b>
8 Neighbor	26.94	0.8574

Nearest Neighbor



25.90/0.7521

Bicubic



27.57/0.7878

SRCNN



**28.02/0.8587**

E- SRCNN (Ours)



26.10/0.8460

C5 C-SRCNN (Ours)



**27.38/0.8592**

C9 C-SRCNN (Ours)



26.94/0.8574

Original



Results for man.bmp

Method	PSNR	SSIM
Nearest Neighbor	22.13	0.6358
Bicubic	23.86	0.6569
SRCNN	25.75	0.7728
Extended Patch	23.31	0.7086
4 Neighbor	25.84	0.7721
8 Neighbor	<b>26.02</b>	<b>0.7731</b>

PSNR/SSIM

Nearest Neighbor



22.13/0.6358

Bicubic



23.86/0.6569

SRCNN



25.75/0.7728

E- SRCNN (Ours)



23.31/0.7086

C5 C-SRCNN (Ours)



25.84/0.7721

C9 C-SRCNN (Ours)



**26.02/0.7731**

Original

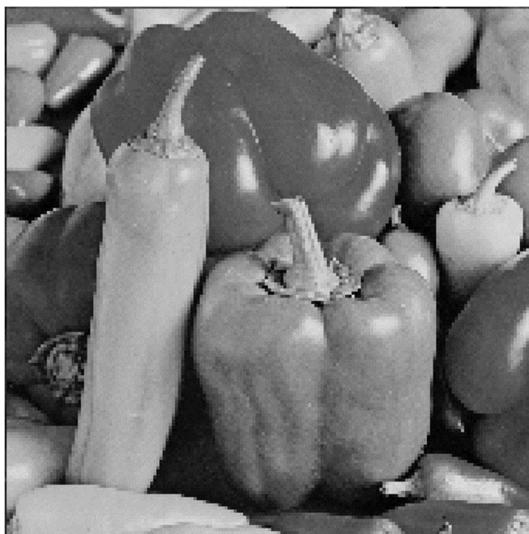


PSNR/SSIM

Results for pepper.bmp

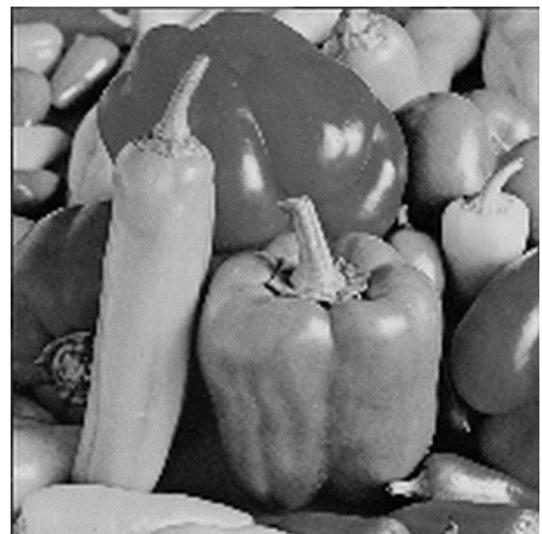
Method	PSNR	SSIM
Nearest Neighbor	25.10	0.7649
Bicubic	<b>27.35</b>	0.8099
SRCNN	23.51	0.8554
Extended Patch	23.34	0.8541
4 Neighbor	24.21	0.8556
8 Neighbor	25.19	<b>0.8570</b>

Nearest Neighbor



2510/0.7649

Bicubic



**27.35/0.8099**

SRCNN



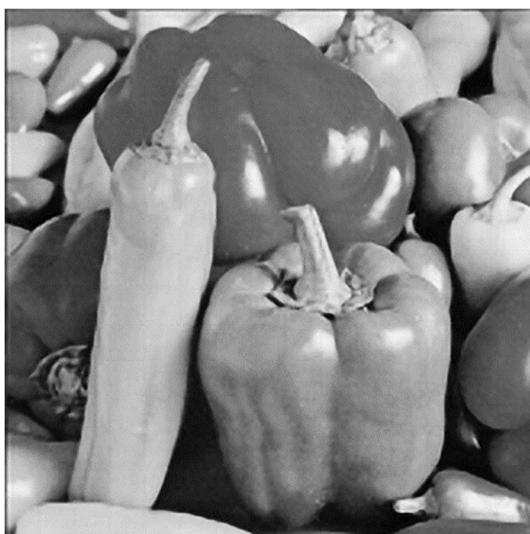
23.51/0.8554

E- SRCNN (Ours)



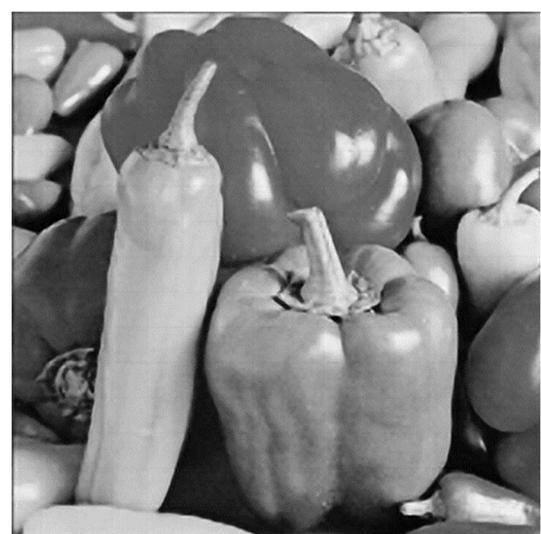
23.34/0.8541

C5 C-SRCNN (Ours)



24.21/0.8556

C9 C-SRCNN (Ours)



25.19/**0.8570**

Original



Results for monarch.bmp

Method	PSNR	SSIM
Nearest Neighbor	24.01	0.8529
Bicubic	25.47	0.8740
SRCNN	28.16	0.9285
Extended Patch	20.64	0.8932
4 Neighbor	26.19	0.9245
8 Neighbor	<b>29.09</b>	<b>0.9308</b>

PSNR/SSIM

Nearest Neighbor



Bicubic



**24.01/0.8529**

**25.47/0.8740**

SRCNN



E- SRCNN (Ours)



28.16/0.9285

20.64/0.8932

C5 C-SRCNN (Ours)



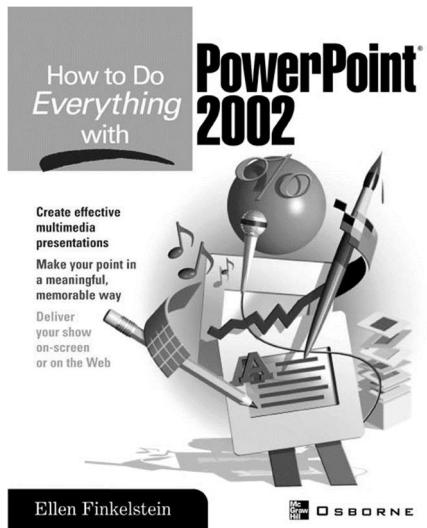
C9 C-SRCNN (Ours)



26.19/0.9245

**29.09/0.9308**

# Original

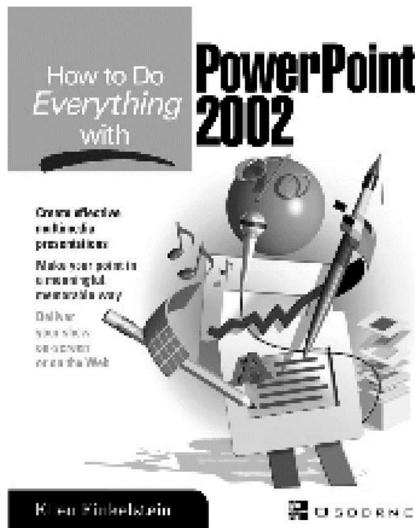


PSNR/SSIM

# Results for ppt3.bmp

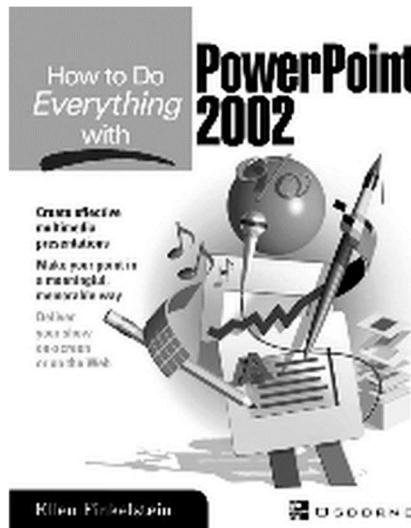
Method	PSNR	SSIM
Nearest Neighbor	18.84	0.8367
Bicubic	20.29	0.8141
SRCNN	22.98	0.8893
Extended Patch	12.74	0.8093
4 Neighbor	23.12	<b>0.8954</b>
8 Neighbor	<b>23.14</b>	0.8906

## Nearest Neighbor



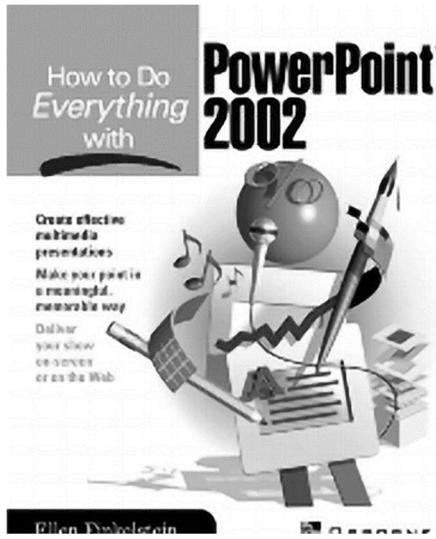
18.84/0.8367

## Bicubic



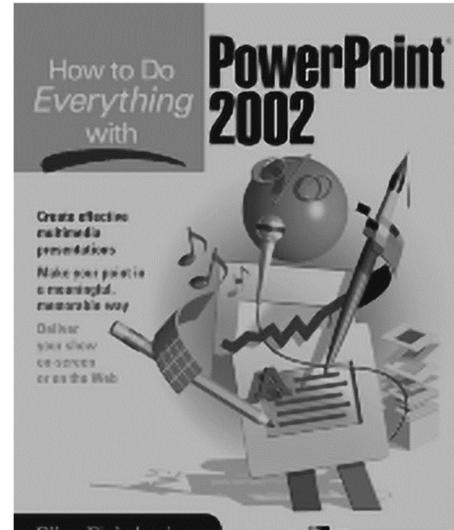
20.29/0.8141

SRCNN



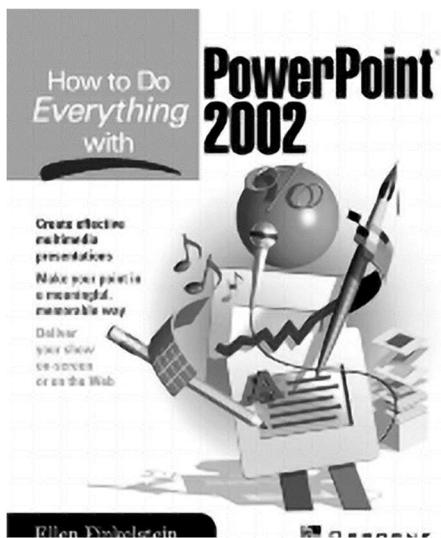
22.98/0.8893

E- SRCNN (Ours)



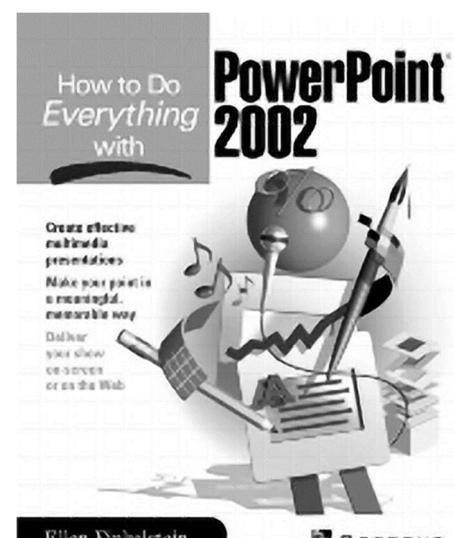
12.74/0.8093

C5 C-SRCNN (Ours)



23.12/0.8954

C9 C-SRCNN (Ours)



23.14/0.8906

Original

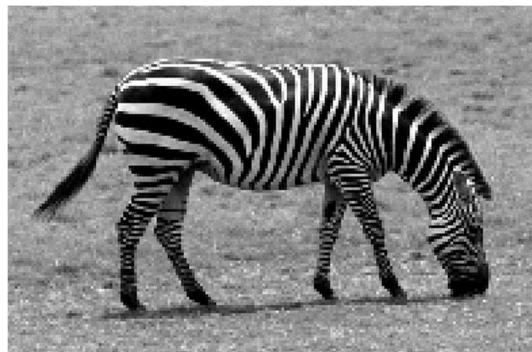


Results for zebra.bmp

Method	PSNR	SSIM
Nearest Neighbor	20.48	0.6705
Bicubic	21.75	0.6704
SRCNN	26.37	0.8357
Extended Patch	23.46	0.7937
4 Neighbor	<b>26.45</b>	<b>0.8372</b>
8 Neighbor	26.30	0.8356

PSNR/SSIM

Nearest Neighbor



Bicubic



20.48/0.6705

21.75/0.6704

SRCNN



E- SRCNN (Ours)



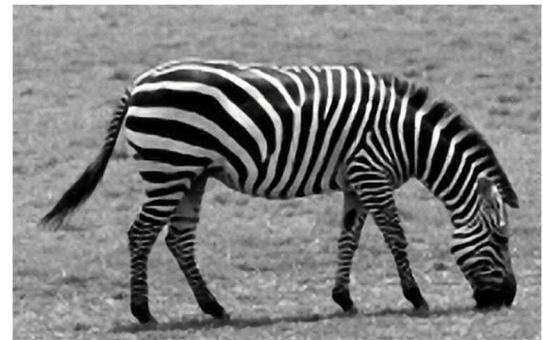
26.37/0.8357

23.46/0.7937

C5 C-SRCNN (Ours)



C9 C-SRCNN (Ours)

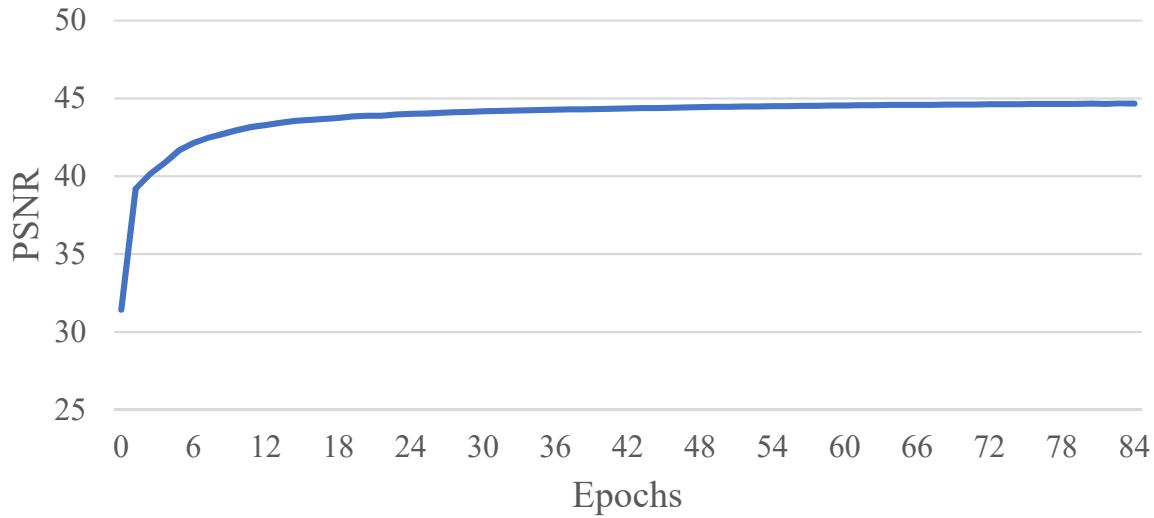


**26.45/0.8372**

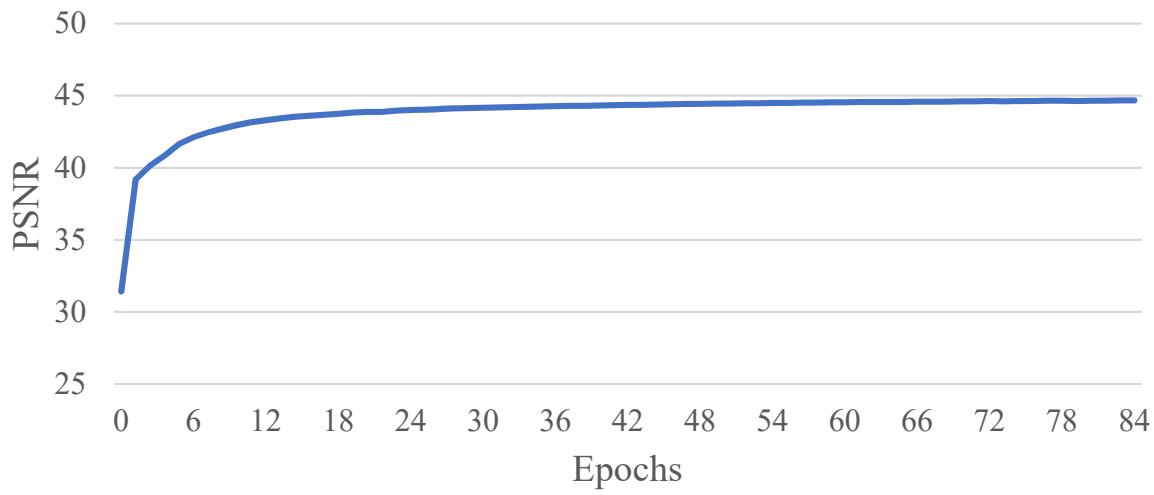
26.30/0.8356

# Training (Medical Images) (DICOM Library)

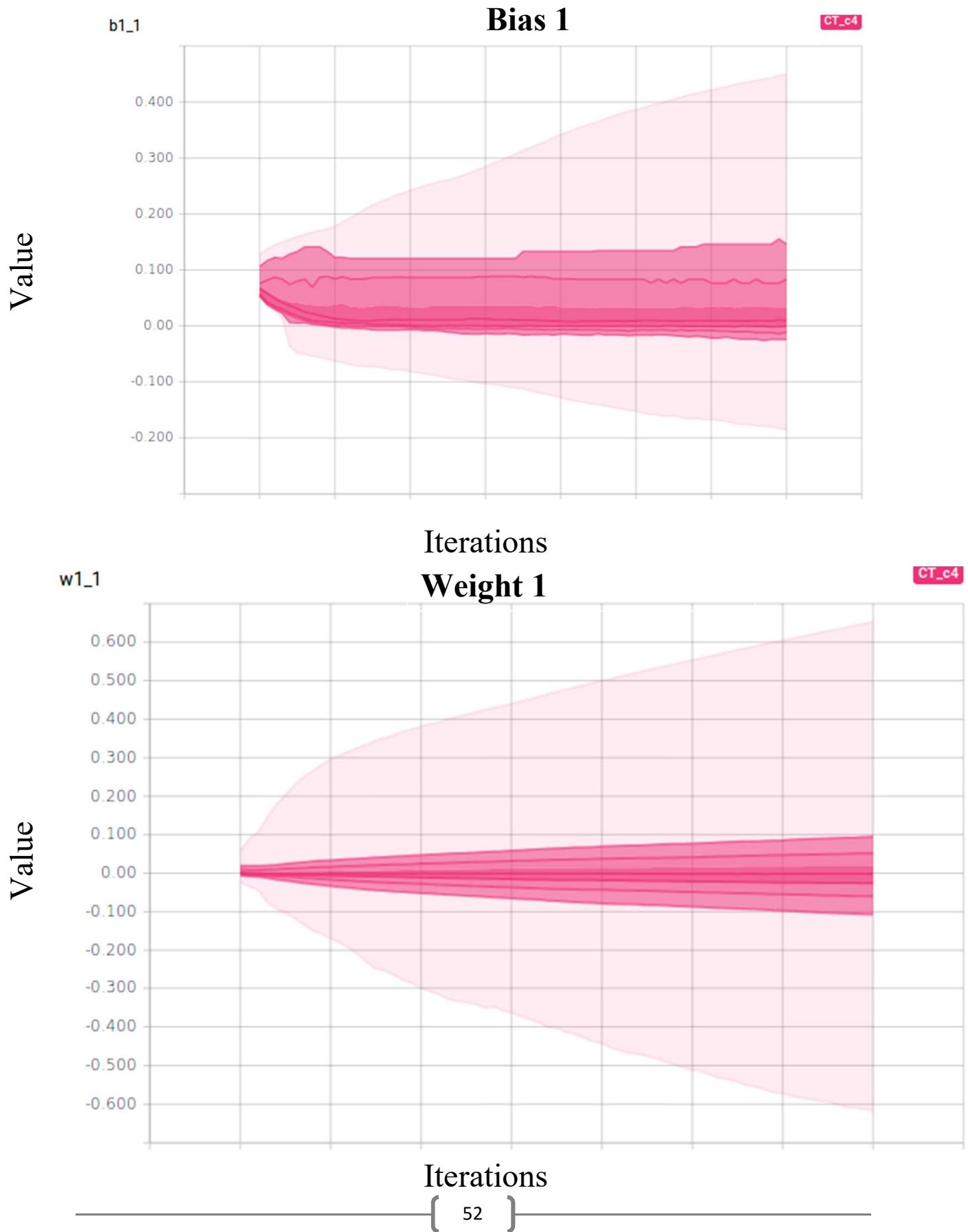
### 4 Neighbor C-SRCNN Validation Set PSNR on Medical Images

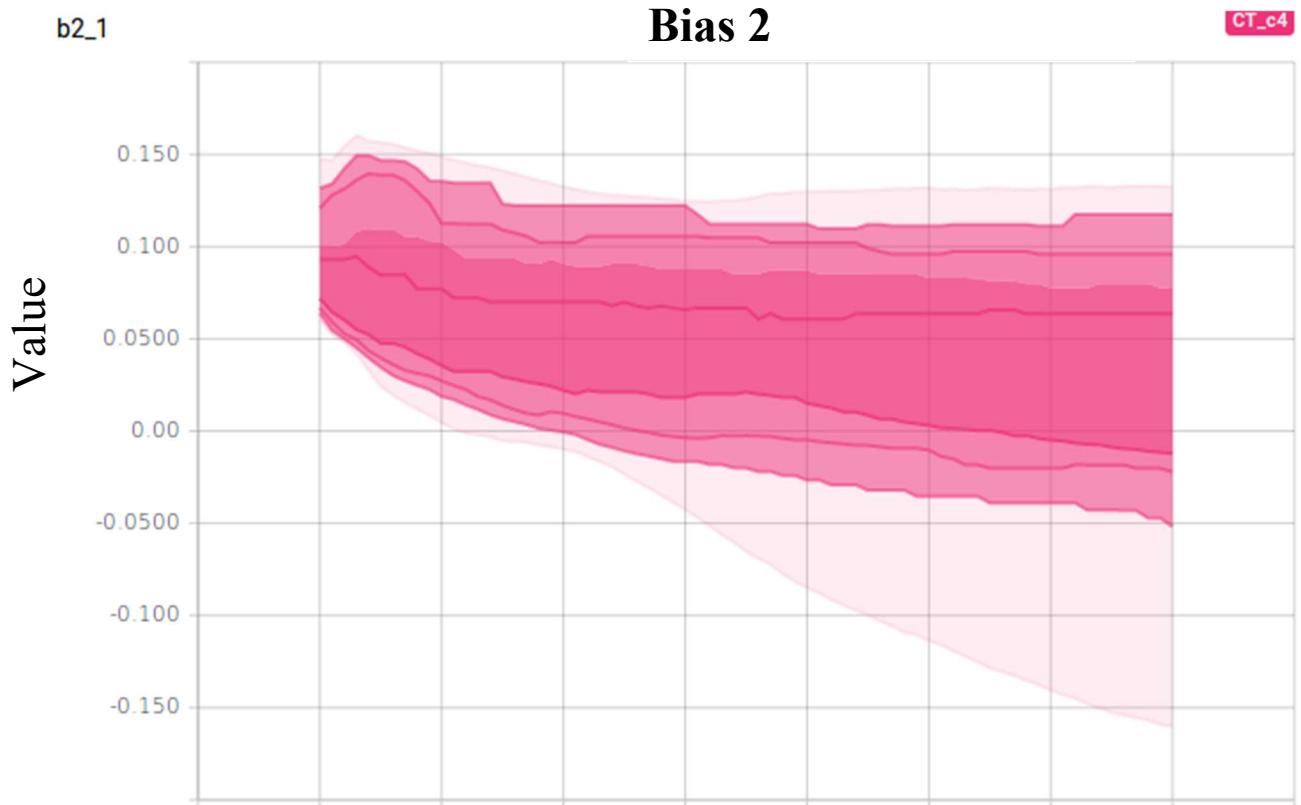


### 4 Neighbor C-SRCNN Training Set PSNR on Medical Images

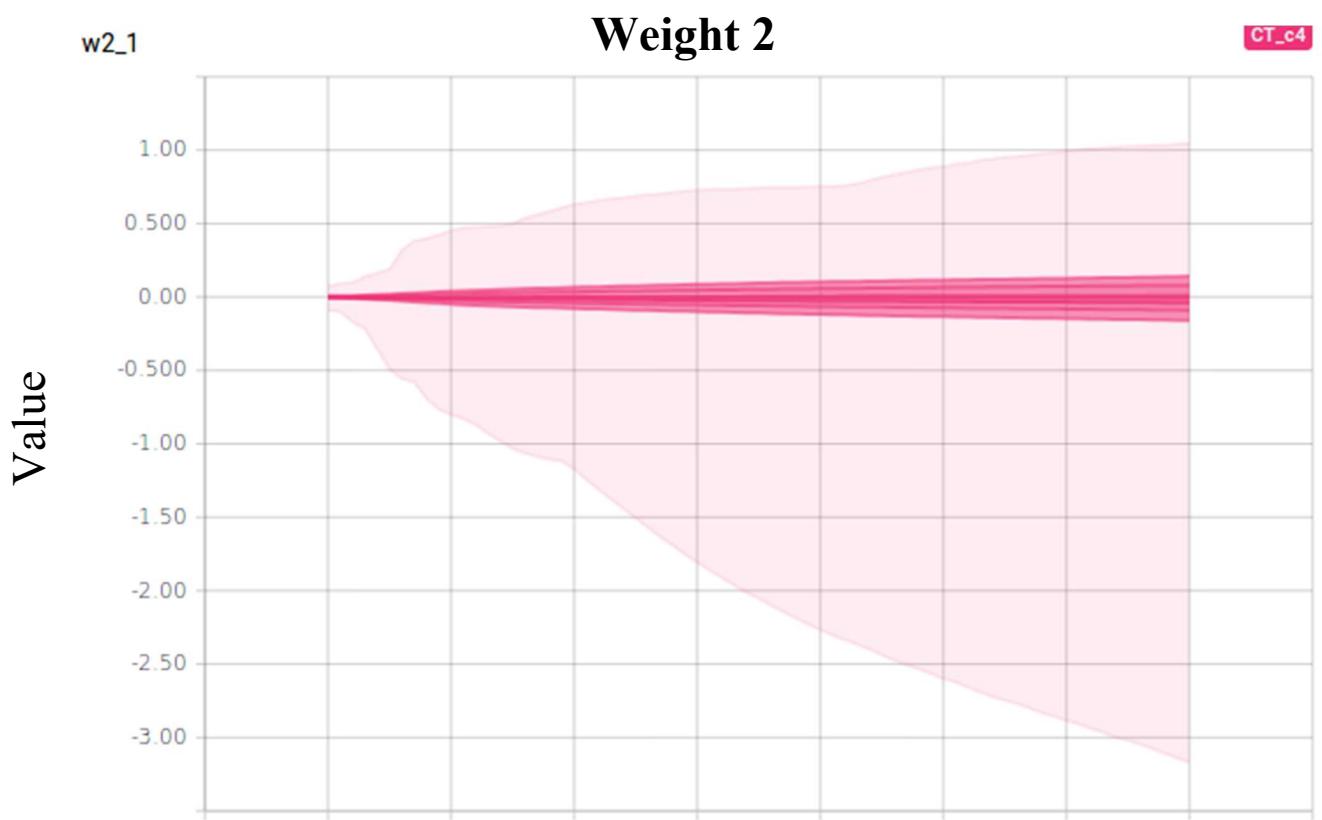


# Distribution of Biases and Weights for 4 Neighbor C-SRCNN over Epochs (Medical Images)

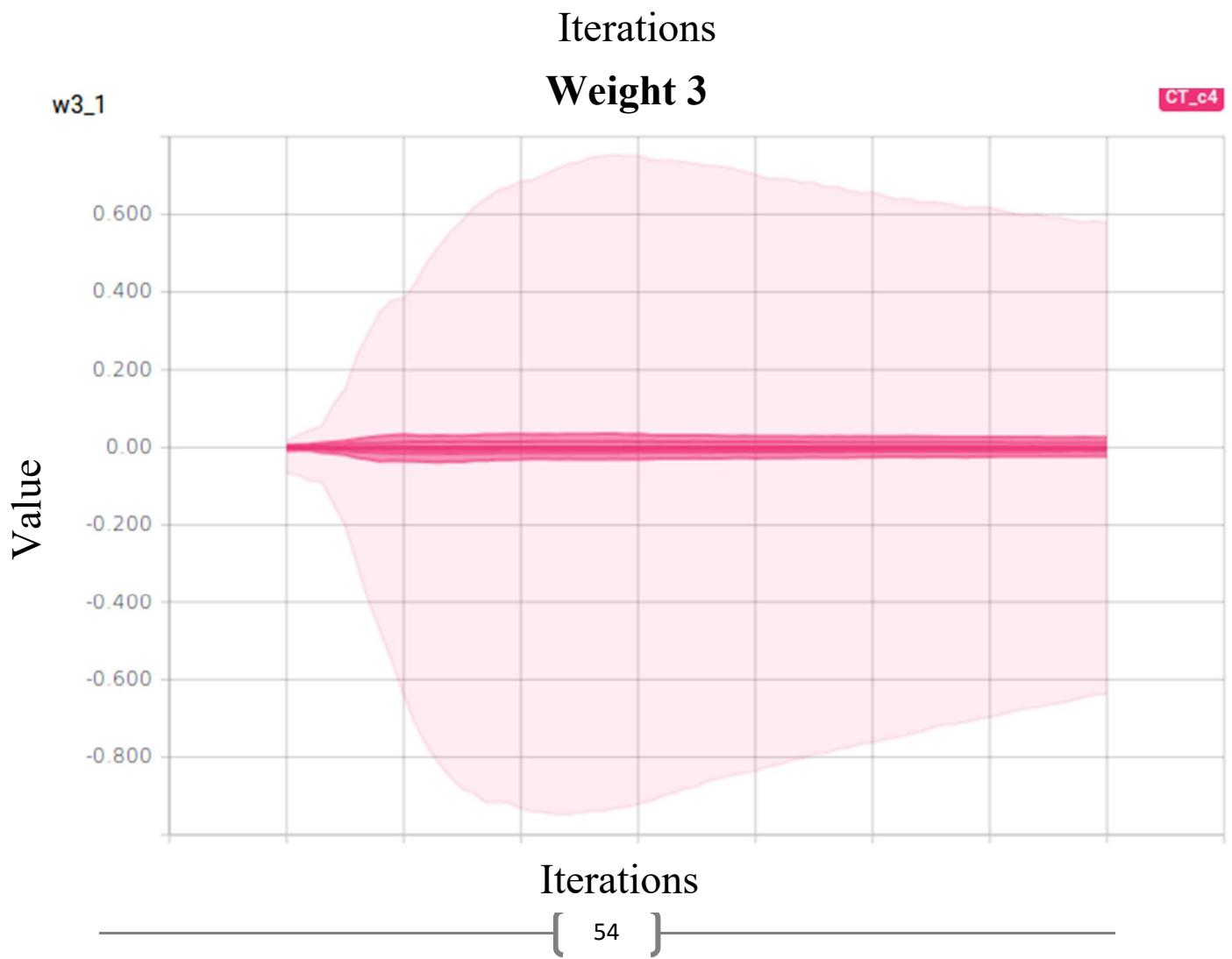




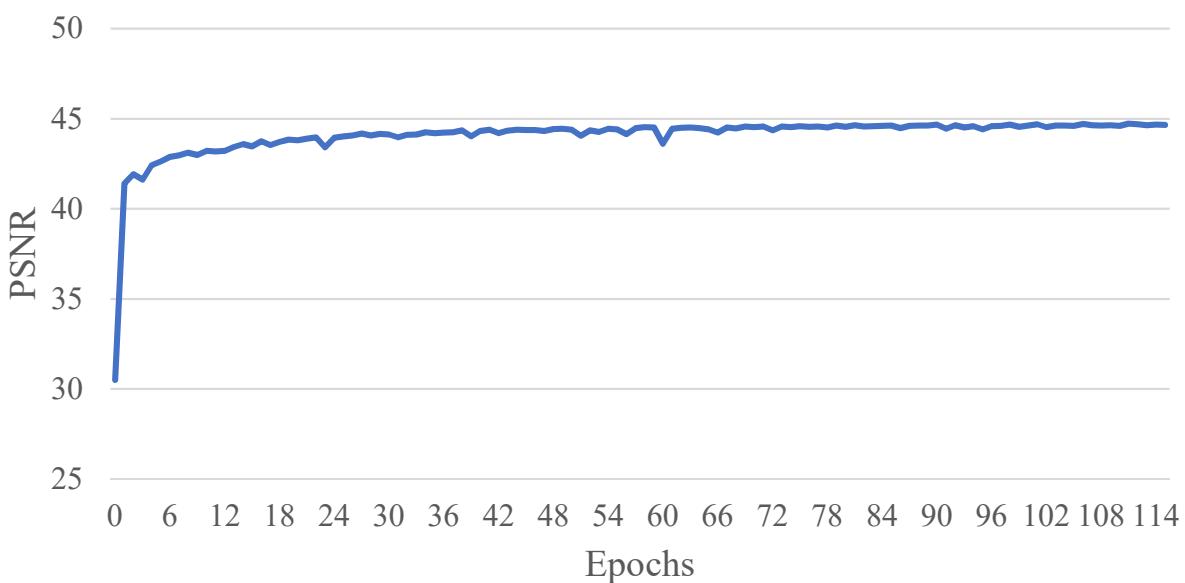
Iterations



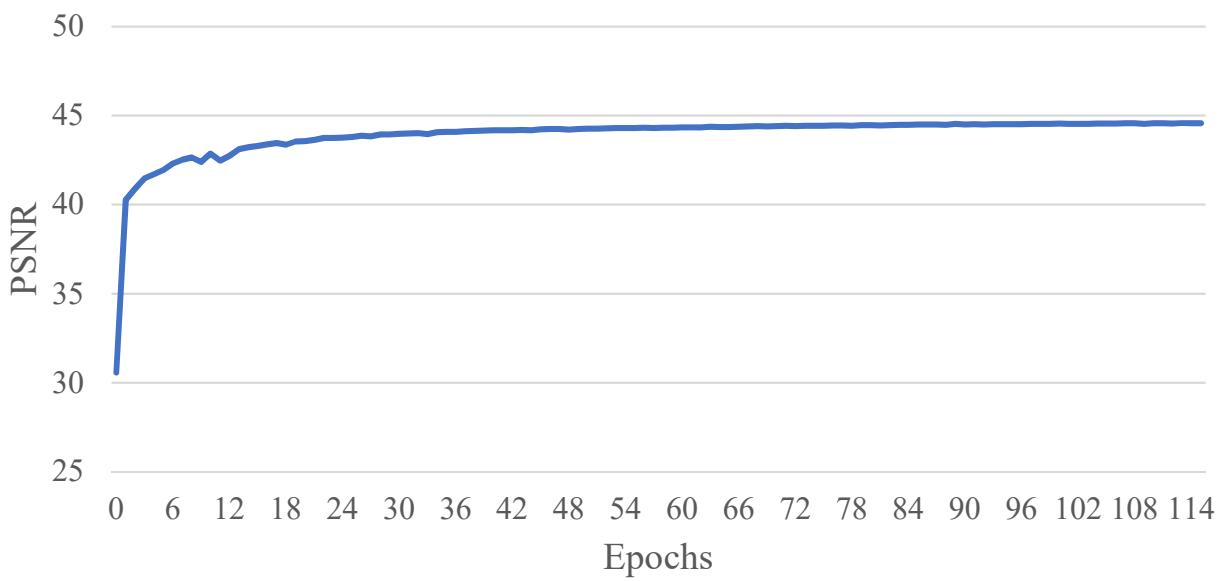
Iterations



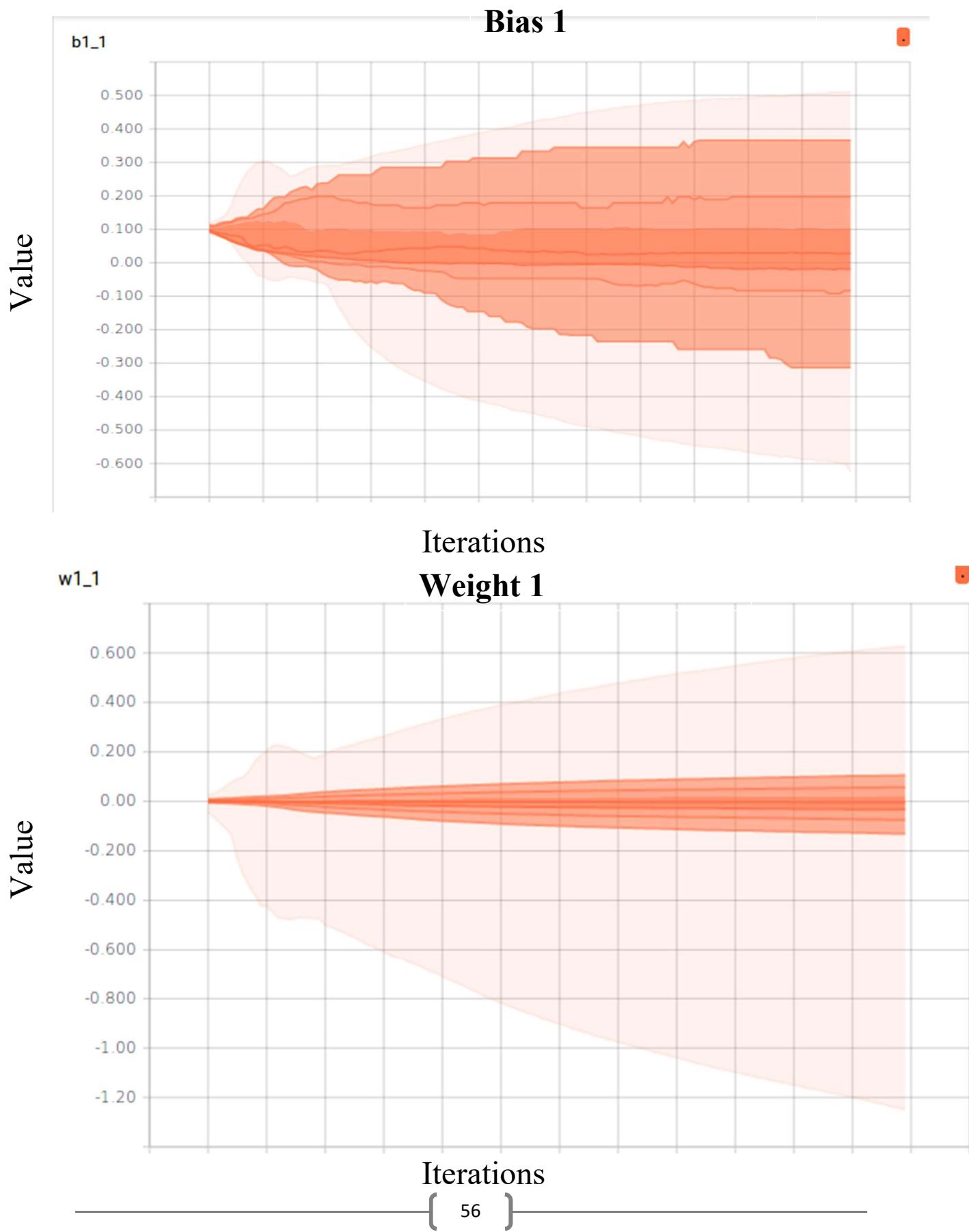
### 8 Neighbor C-SRCNN Validation Set PSNR on Medical Images

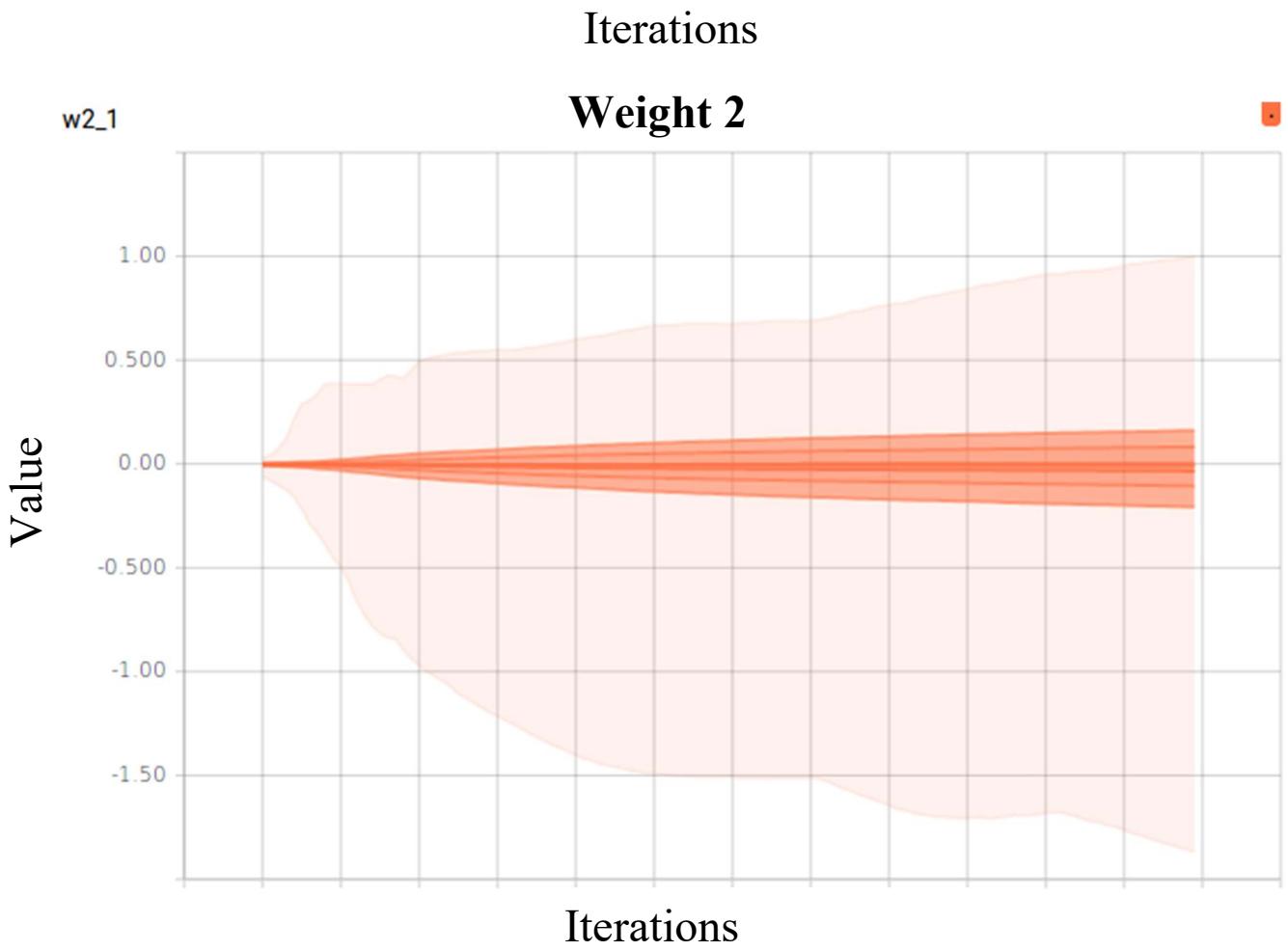
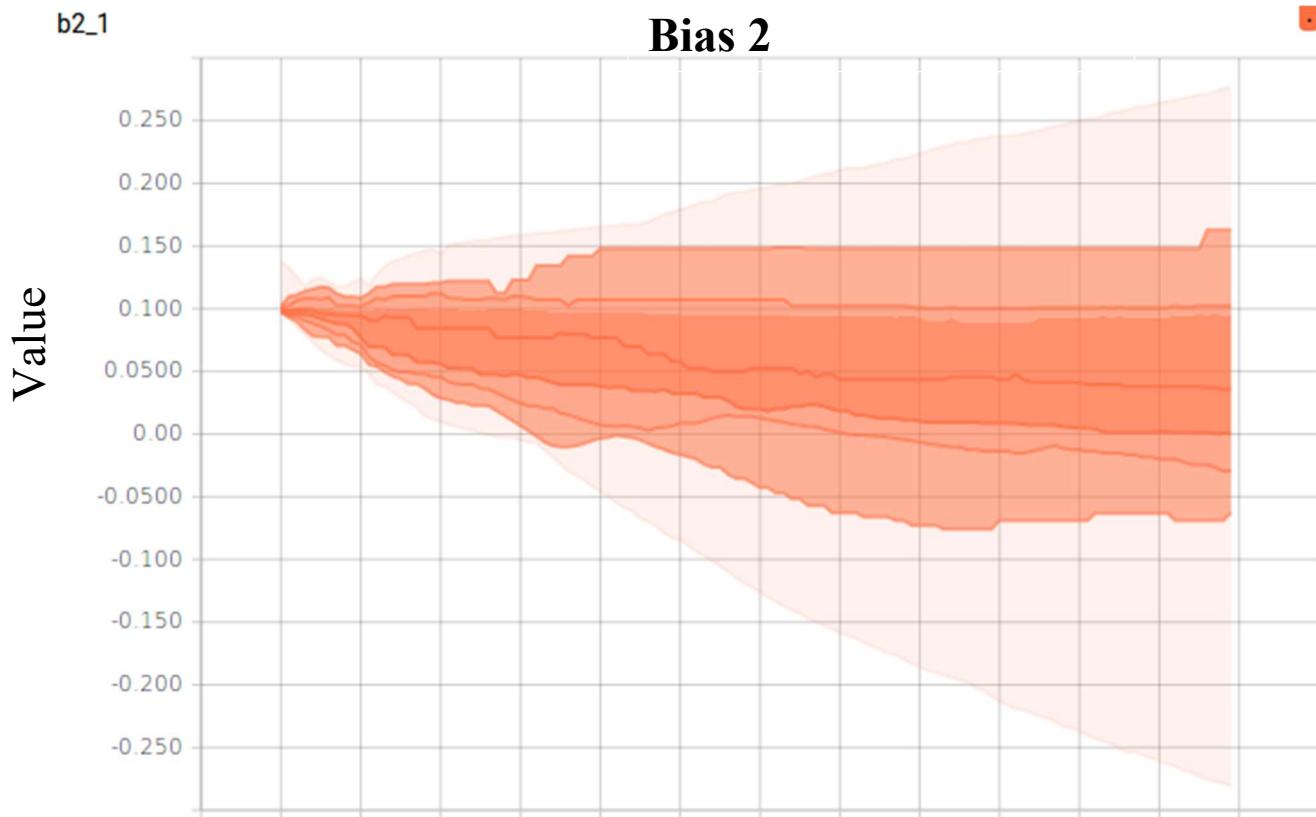


### 8 Neighbor C-SRCNN Training Set PSNR on Medical Images



# Distribution of Biases and Weights for 8 Neighbor C-SRCNN over Epochs (Medical Images)

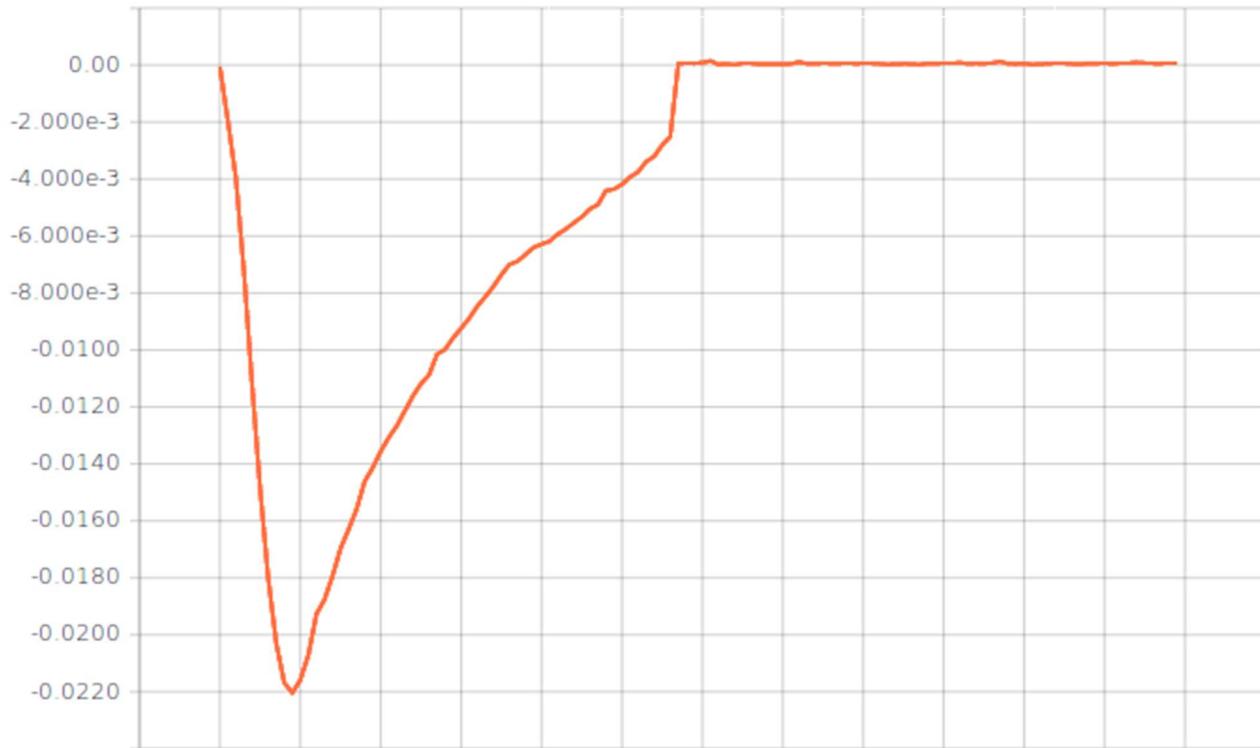




b3\_1

### Bias 3

Value

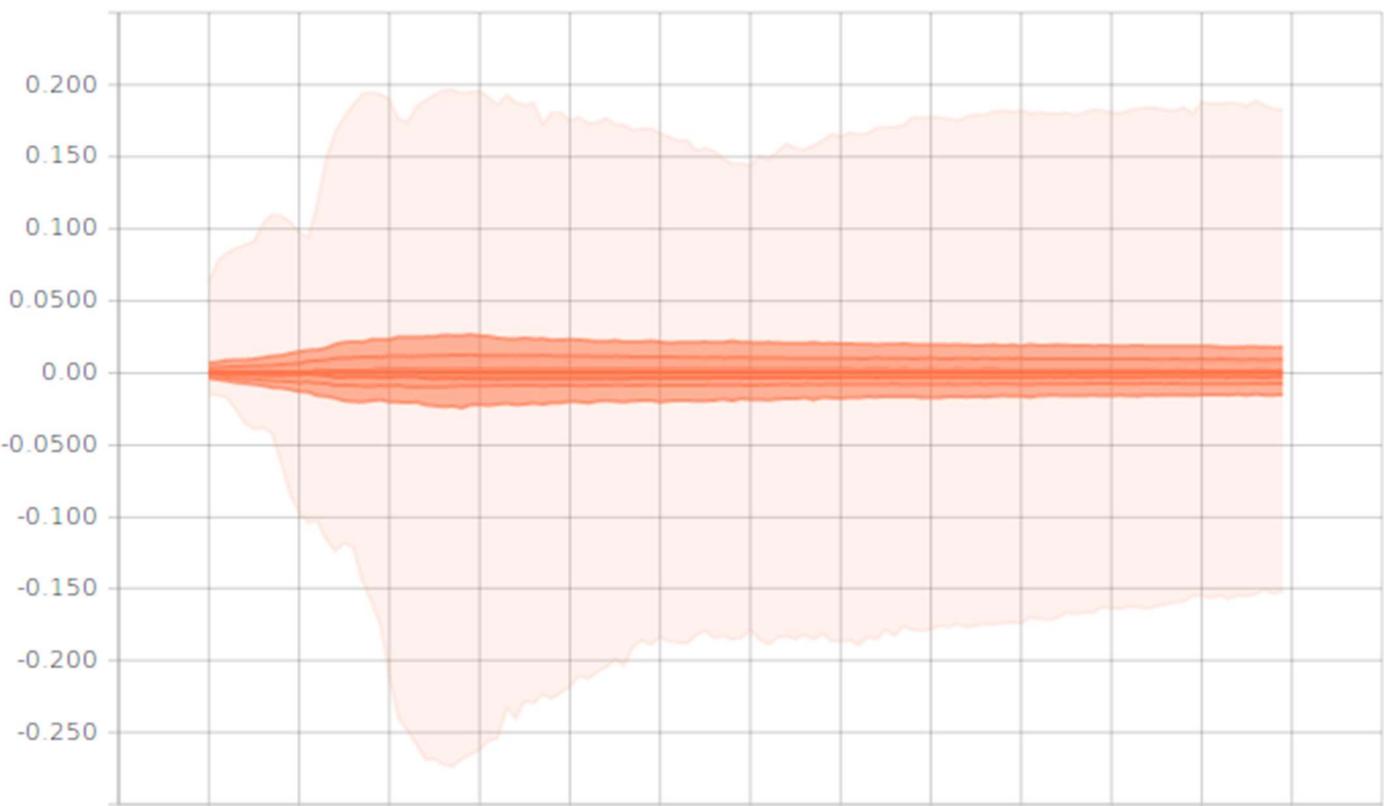


Iterations

w3\_1

### Weight 3

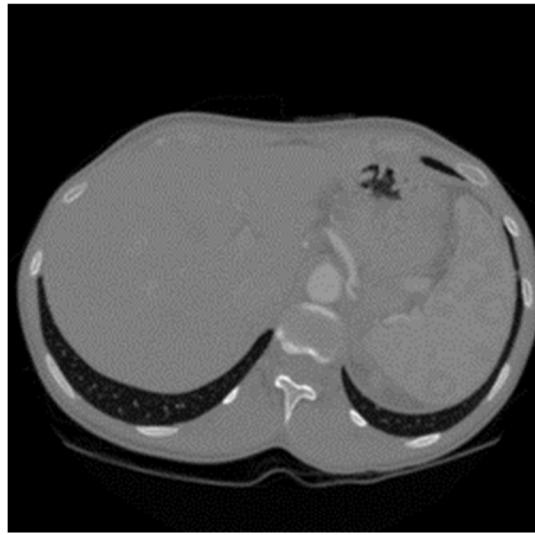
Value



Iterations

# Testing (Medical Images) (DICOM Library)

Original

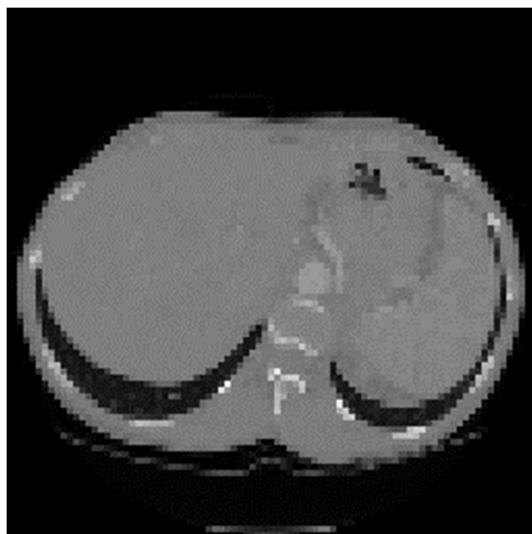


PSNR/SSIM

Results for image16.bmp

Method	PSNR	SSIM
Nearest Neighbor	27.57	.8710
Bicubic	27.98	.8854
SRCCN	27.81	.9297
Extended Patch	27.63	.7459
4 Neighbor	30.96	.9435
8 Neighbor	<b>33.36</b>	<b>.9476</b>

Nearest Neighbor



27.57/0.8710

Bicubic



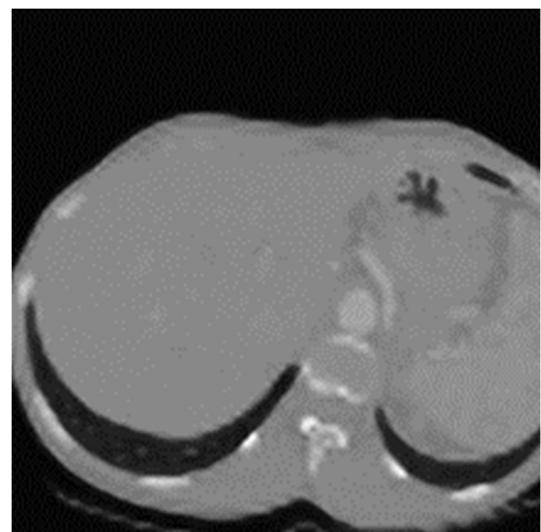
27.98/0.8854

SRCNN



27.81/0.9297

E- SRCNN (Ours)



27.63/0.7459

C5 C-SRCNN (Ours)



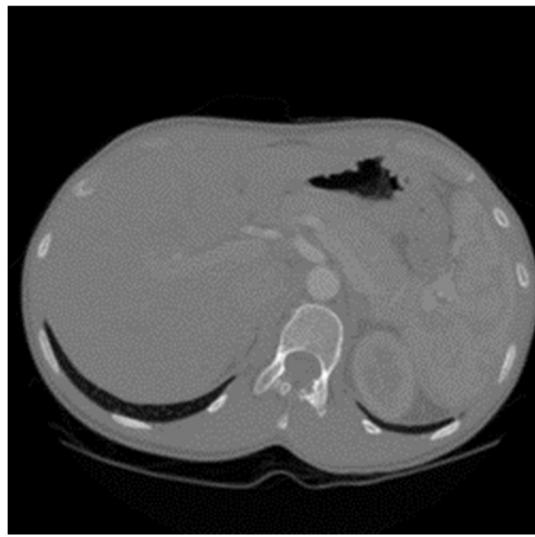
30.96/0.9435

C9 C-SRCNN (Ours)



**33.36/0.9476**

Original



PSNR/SSIM

Results for image38.bmp

Method	PSNR	SSIM
Nearest Neighbor	27.41	.8757
Bicubic	28.94	.8892
SRCCN	33.06	.9338
Extended Patch	30.22	.7588
4 Neighbor	34.23	.9452
8 Neighbor	<b>34.75</b>	<b>.9489</b>

Nearest Neighbor



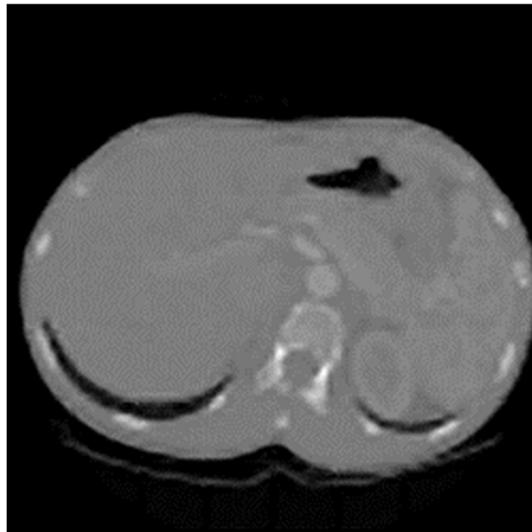
27.41/0.8757

Bicubic



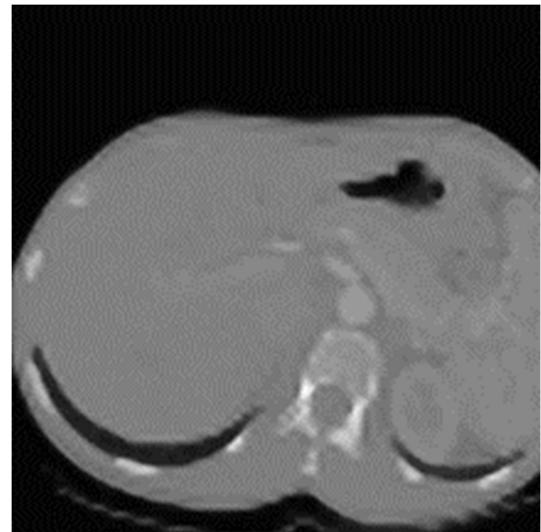
28.94/0.8892

SRCNN



33.06/0.9338

E- SRCNN (Ours)



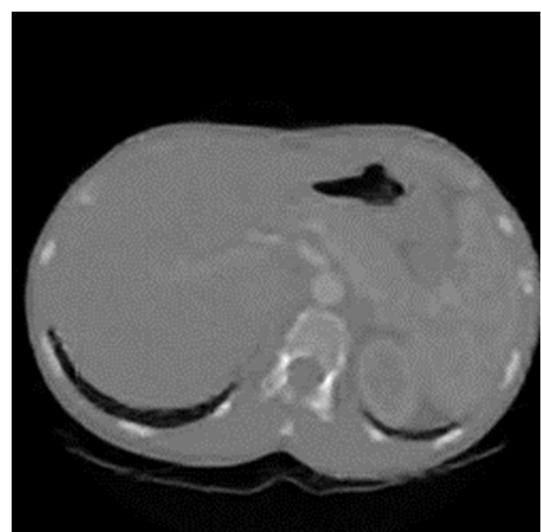
30.22/0.7588

C5 C-SRCNN (Ours)



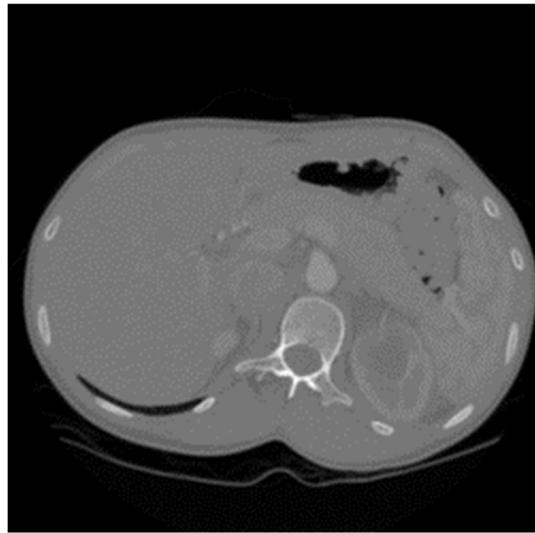
34.23/0.9452

C9 C-SRCNN (Ours)



**34.75/0.9489**

Original

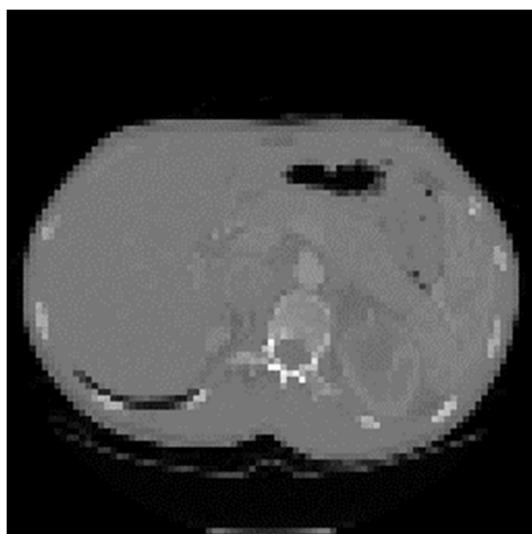


PSNR/SSIM

Results for image56.bmp

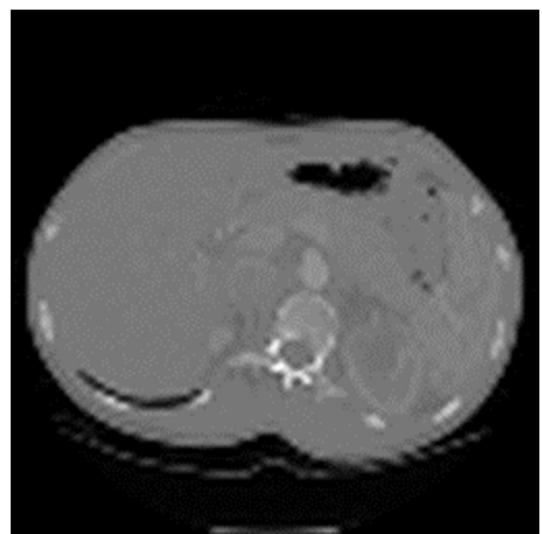
Method	PSNR	SSIM
Nearest Neighbor	26.97	.8736
Bicubic	29.54	.8902
SRCCN	32.89	.9327
Extended Patch	32.24	.7590
4 Neighbor	34.44	.9443
8 Neighbor	<b>34.85</b>	<b>.9482</b>

Nearest Neighbor



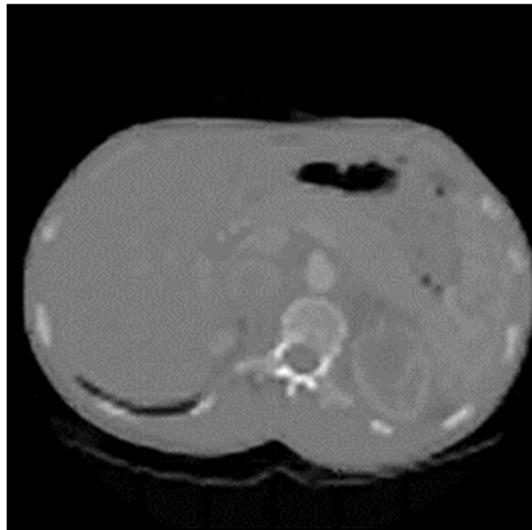
26.97/0.8736

Bicubic



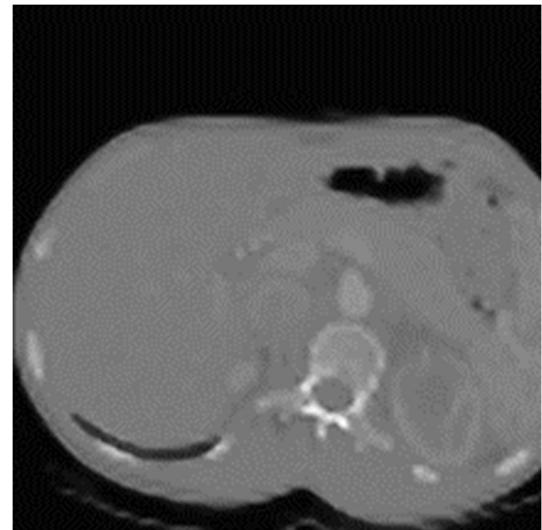
29.54/0.8902

SRCNN



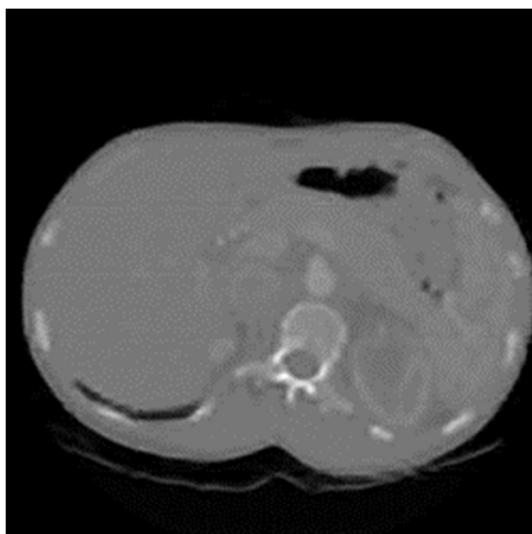
32.89/0.9327

E- SRCNN (Ours)



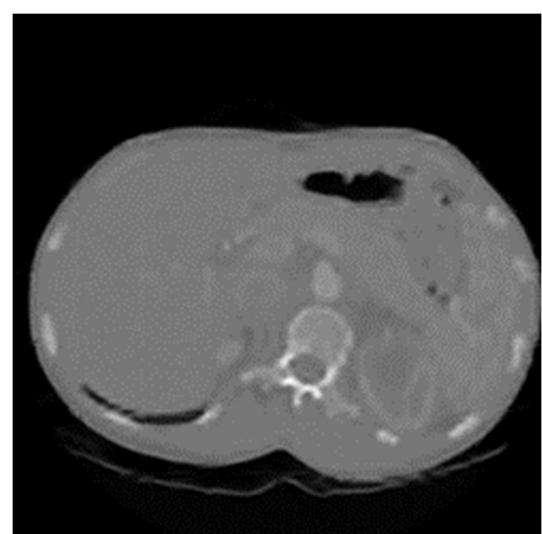
32.24/0.7590

C5 C-SRCNN (Ours)  
e



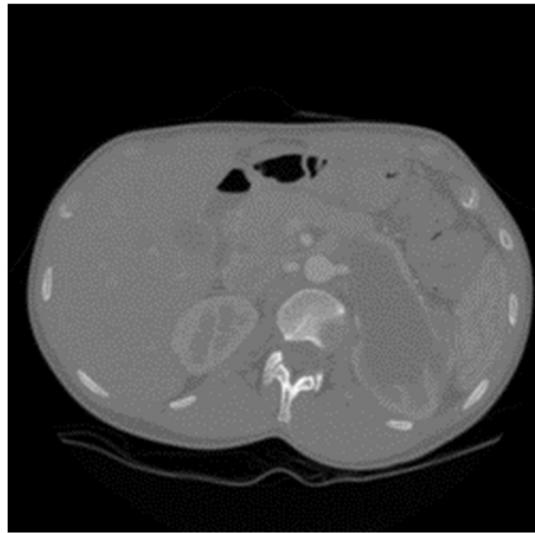
34.44/0.9443

C9 C-SRCNN (Ours)



**34.85/0.9482**

Original



PSNR/SSIM

Results for image86.bmp

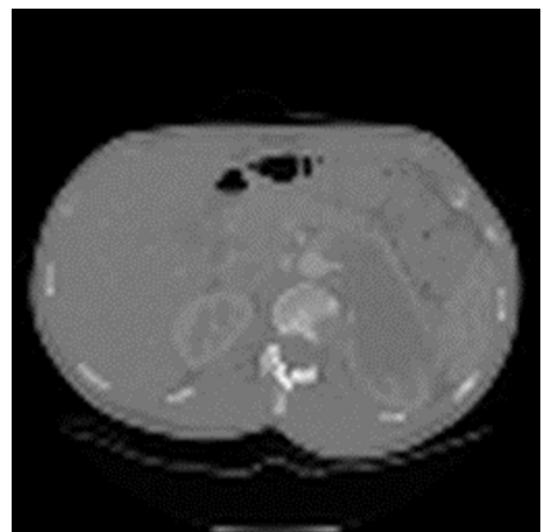
Method	PSNR	SSIM
Nearest Neighbor	27.52	.8779
Bicubic	30.05	.8931
SRCCN	29.24	.9323
Extended Patch	32.50	.7653
4 Neighbor	32.62	.9448
8 Neighbor	<b>32.72</b>	<b>.9462</b>

Nearest Neighbor



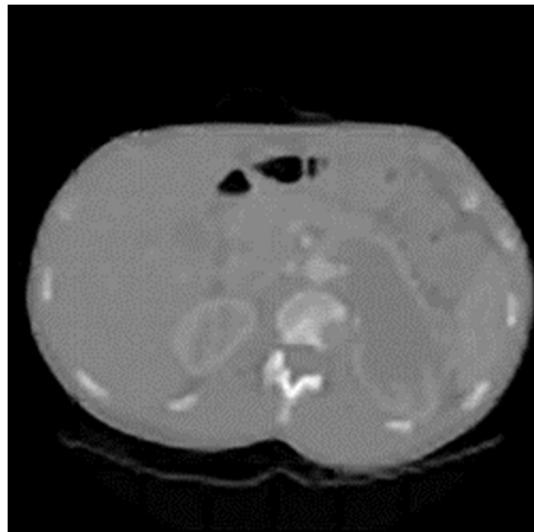
27.52/0.8779

Bicubic



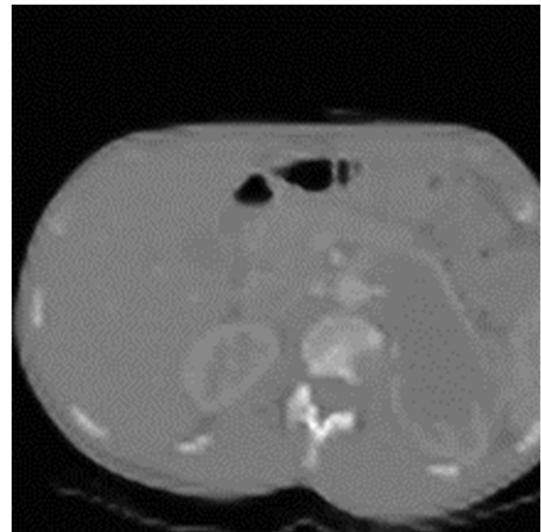
30.05/0.8931

SRCNN



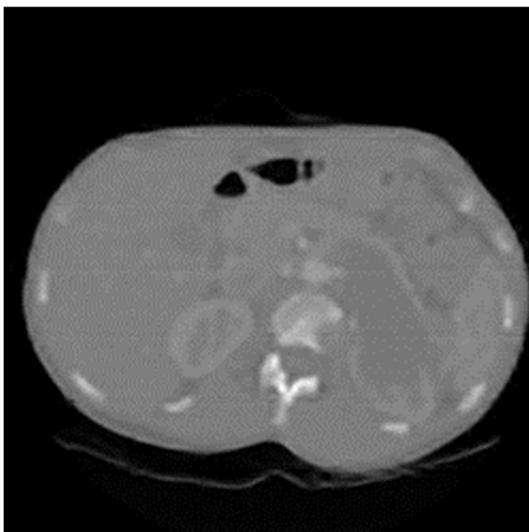
29.24 .9323

E- SRCNN (Ours)



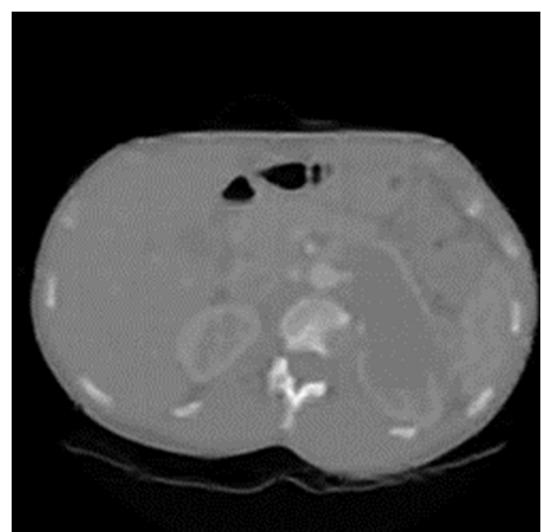
32.50/0.7653

C5 C-SRCNN (Ours)



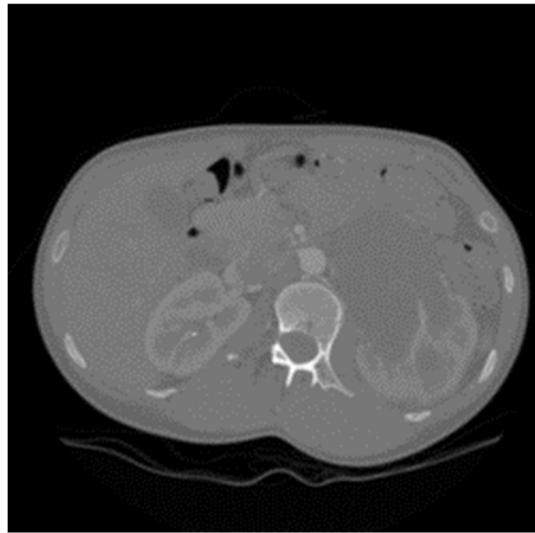
32.62/0.9448

C9 C-SRCNN (Ours)



**32.72/0.9462**

Original

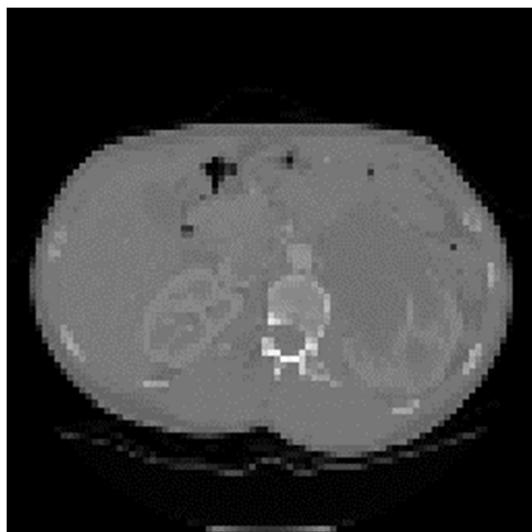


PSNR/SSIM

Results for image100.bmp

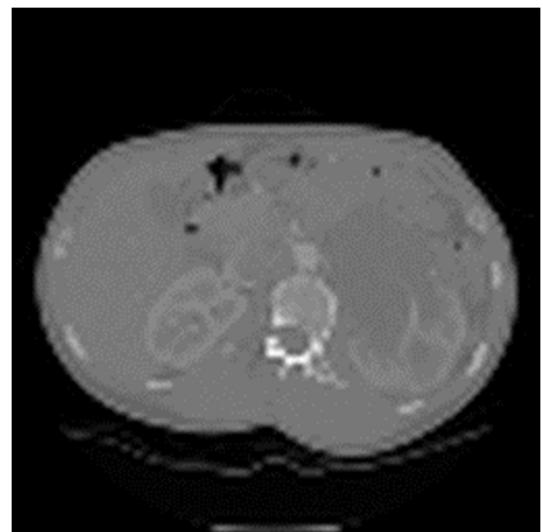
Method	PSNR	SSIM
Nearest Neighbor	27.57	.8765
Bicubic	30.22	.8897
SRCCN	29.70	.9294
Extended Patch	27.59	.7253
4 Neighbor	33.66	.9422
8 Neighbor	<b>34.06</b>	<b>.9458</b>

Nearest Neighbor



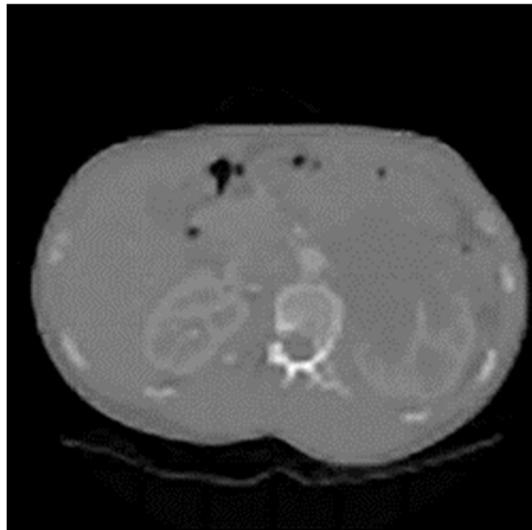
27.57/0.8765

Bicubic



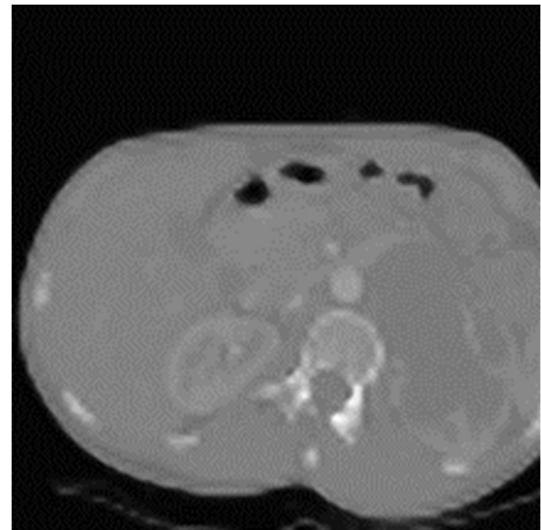
30.22/0.8897

SRCNN



29.70/0.9294

E- SRCNN (Ours)



27.59/0.7253

C5 C-SRCNN (Ours)



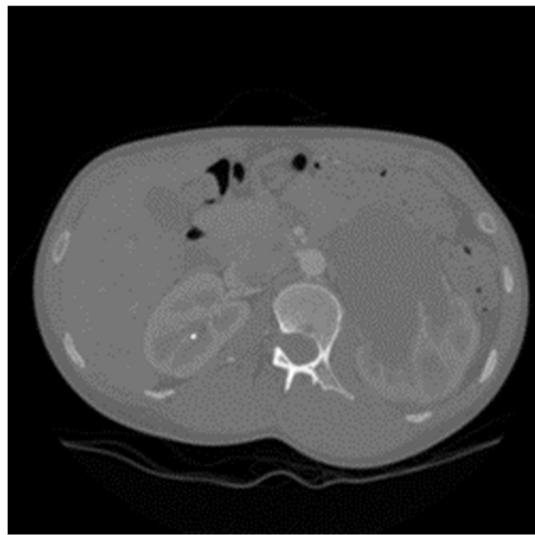
33.66/0.9422

C9 C-SRCNN (Ours)



**34.06/0.9458**

Original

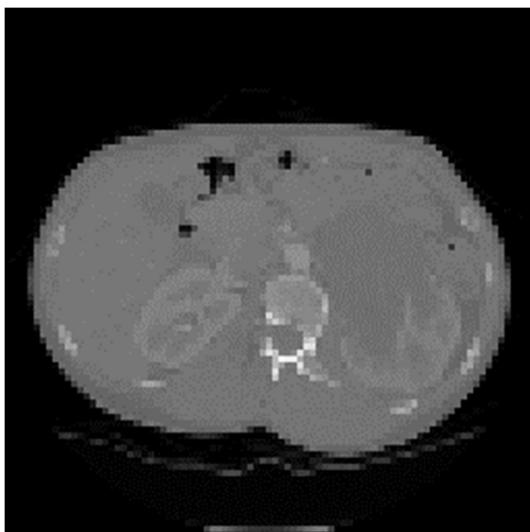


PSNR/SSIM

Results for image118.bmp

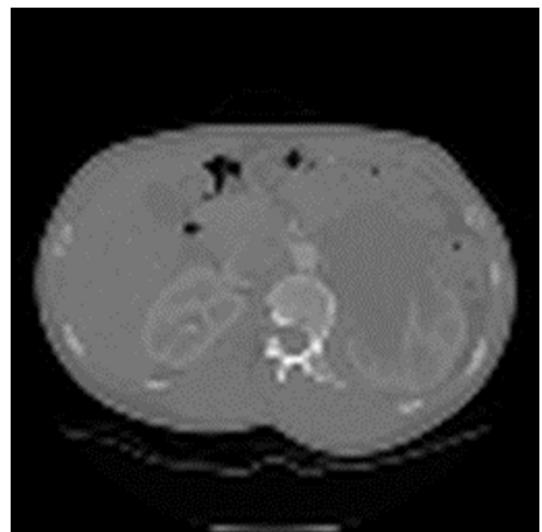
Method	PSNR	SSIM
Nearest Neighbor	27.41	.8757
Bicubic	30.23	.8907
SRCCN	34.59	.9329
Extended Patch	30.93	.7212
4 Neighbor	35.24	.9442
8 Neighbor	<b>35.67</b>	<b>.9488</b>

Nearest Neighbor



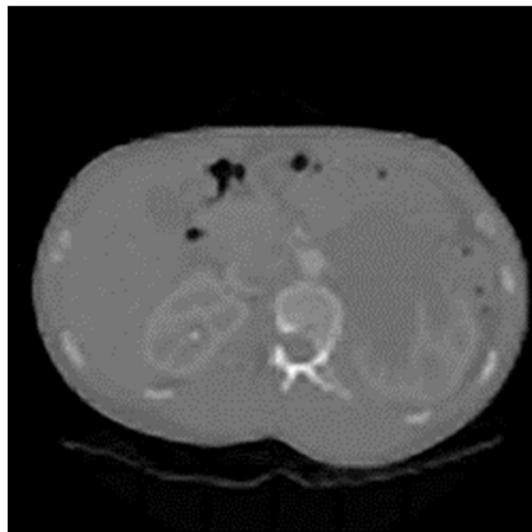
27.41/0.8757

Bicubic



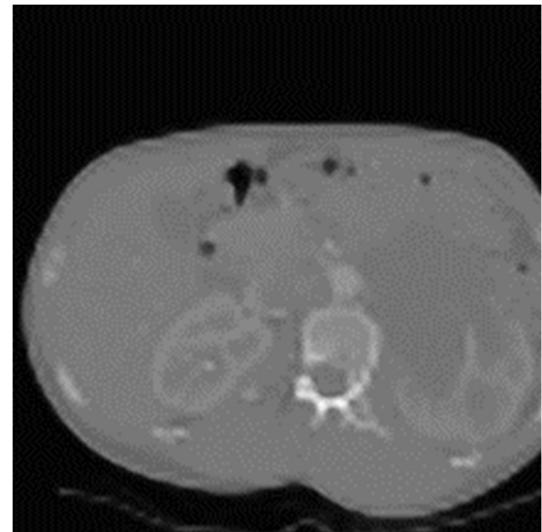
30.23/0.8907

SRCNN



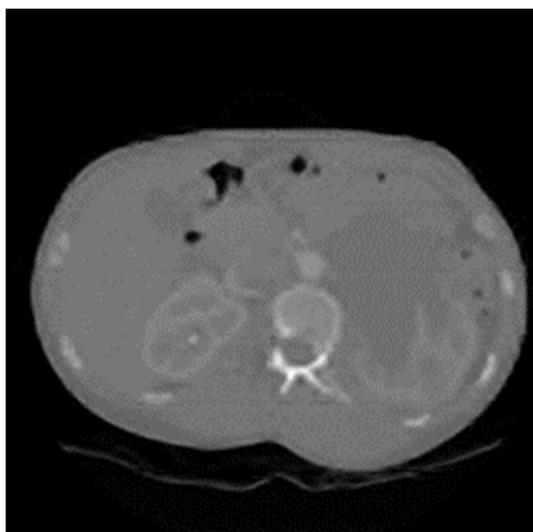
34.59/0.9329

E- SRCNN (Ours)



30.93 .7212

C5 C-SRCNN (Ours)



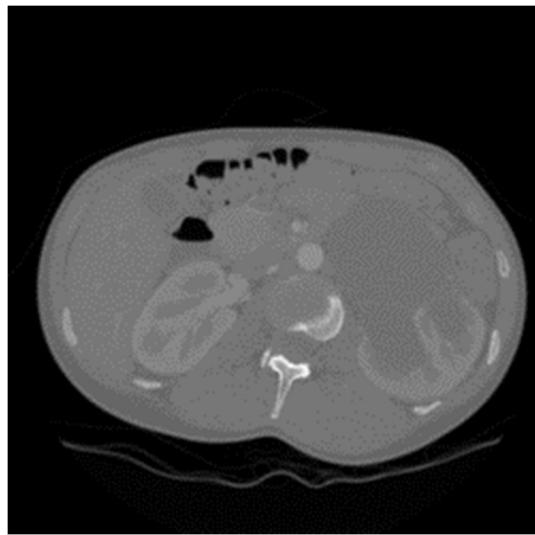
35.24/0.9442

C9 C-SRCNN (Ours)



**35.67/0.9488**

Original

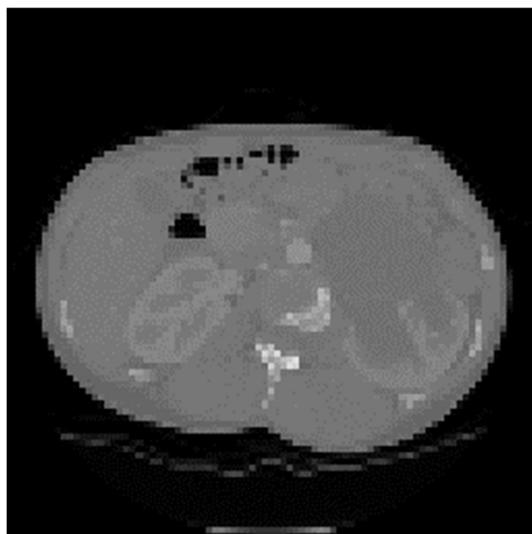


PSNR/SSIM

Results for image 136.bmp

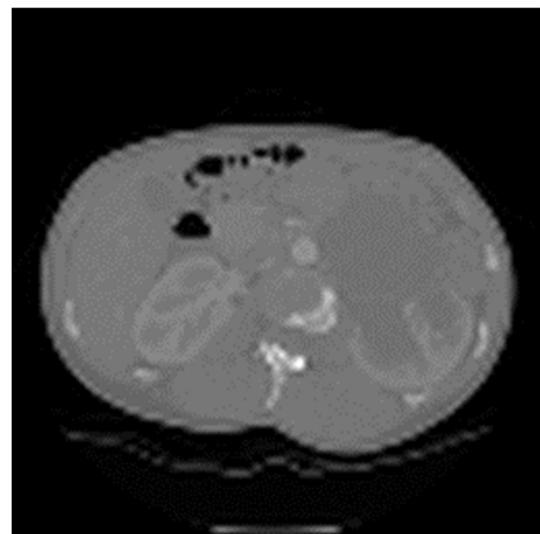
Method	PSNR	SSIM
Nearest Neighbor	27.42	.8801
Bicubic	30.07	.8914
SRCCN	34.57	.9322
Extended Patch	32.49	.7265
4 Neighbor	35.34	.9464
8 Neighbor	<b>35.73</b>	<b>.9508</b>

Nearest Neighbor



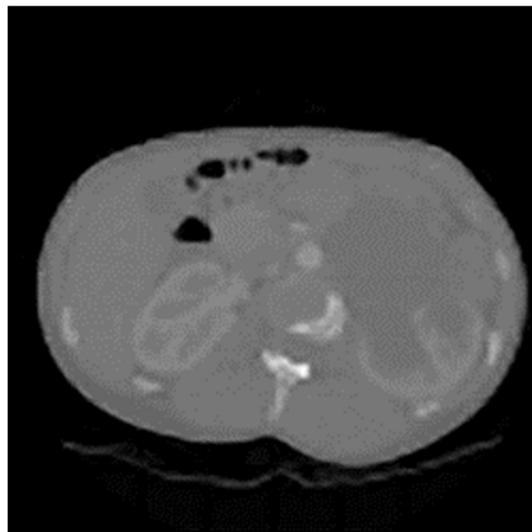
27.42/0.8801

Bicubic



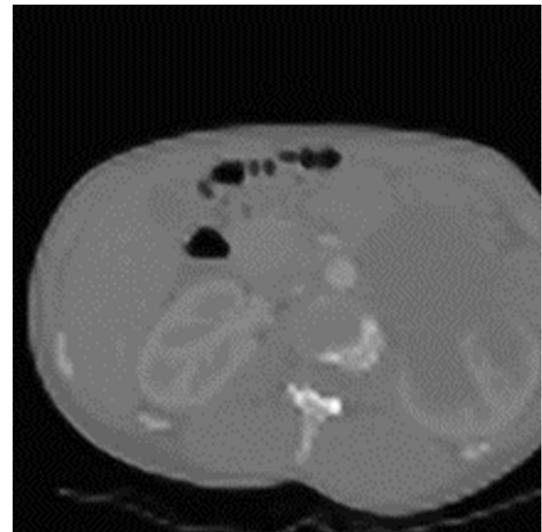
30.07/0.8914

SRCNN



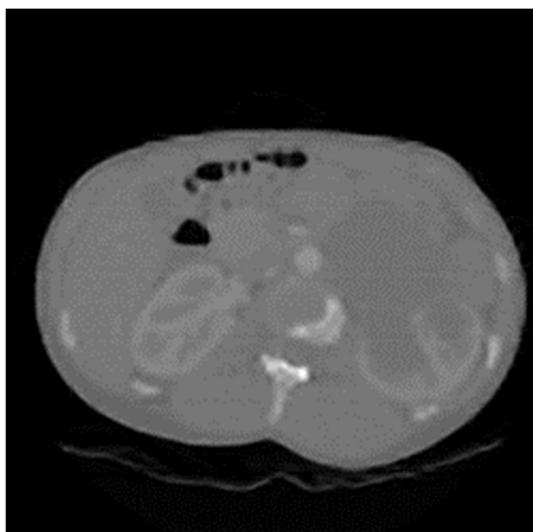
34.57/0.9322

E- SRCNN (Ours)



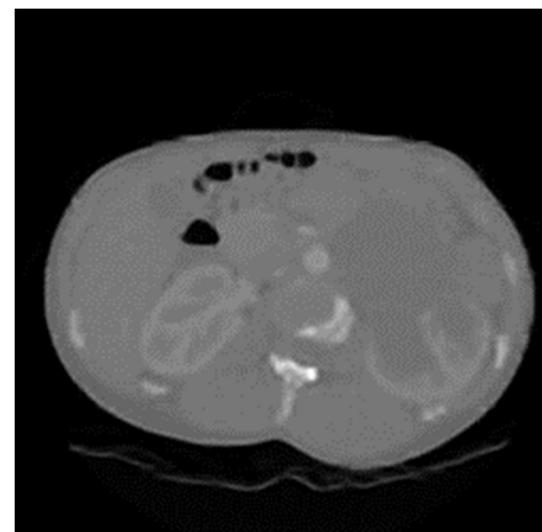
32.49/0.7265

C5 C-SRCNN (Ours)



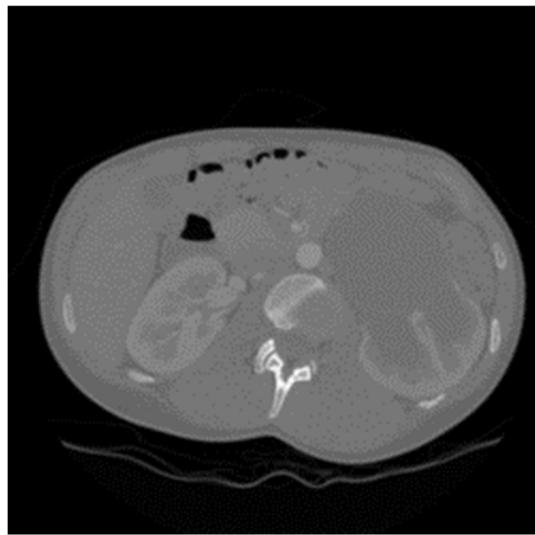
35.34/0.9464

C9 C-SRCNN (Ours)



**35.73/0.9508**

Original

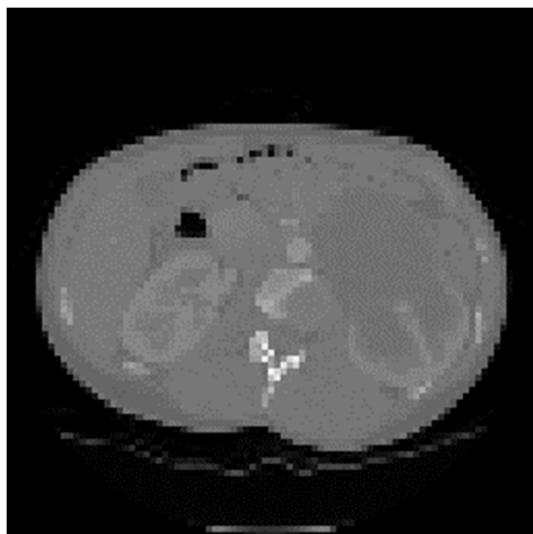


PSNR/SSIM

Results for image 146.bmp

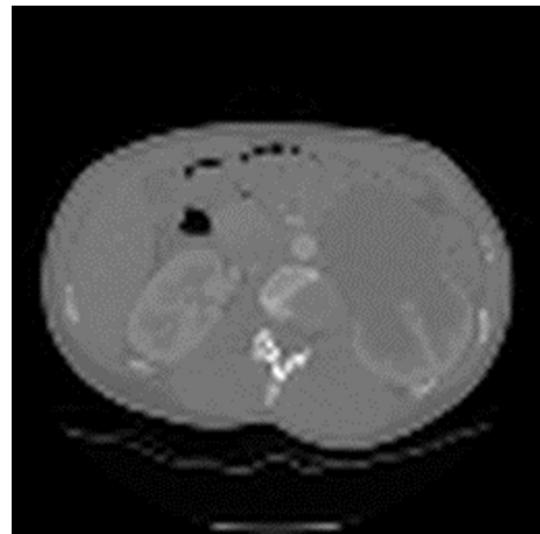
Method	PSNR	SSIM
Nearest Neighbor	27.43	.8820
Bicubic	30.13	.8917
SRCCN	34.43	.9339
Extended Patch	31.86	.7243
4 Neighbor	<b>35.50</b>	.9483
8 Neighbor	35.20	<b>.9517</b>

Nearest Neighbor



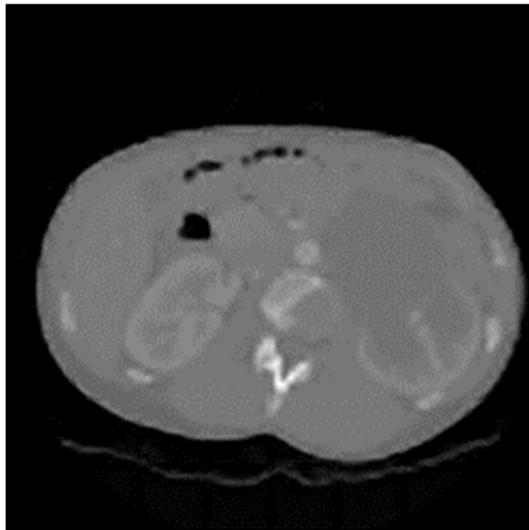
27.43/0.8820

Bicubic



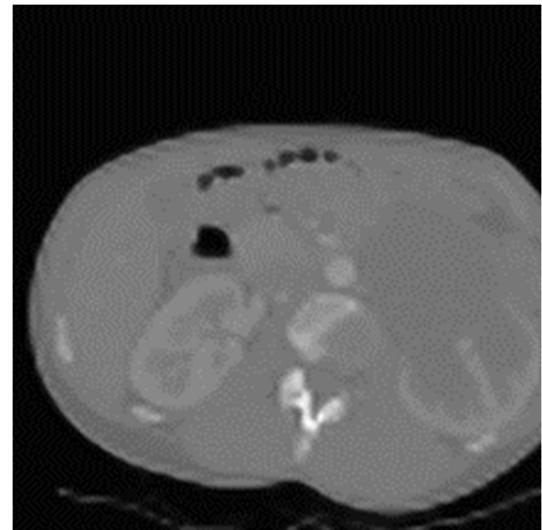
30.13/0.8917

SRCNN



34.43/0.9339

E- SRCNN (Ours)



31.86/0.7243

C5 C-SRCNN (Ours)



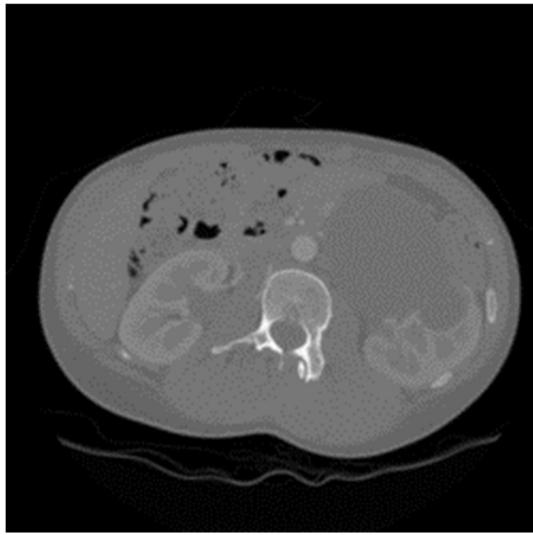
**35.50/0.9483**

C9 C-SRCNN (Ours)



**35.20/0.9517**

Original

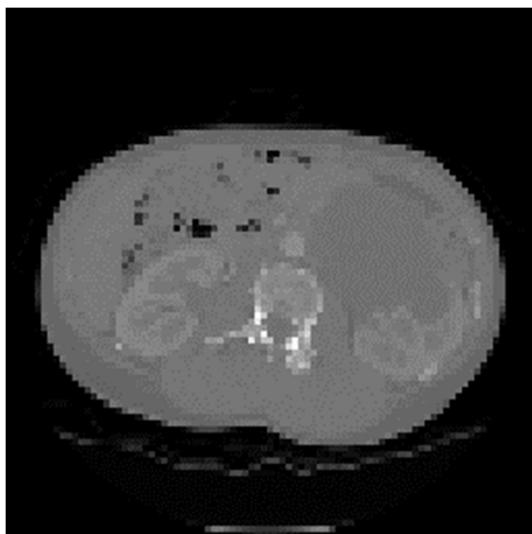


PSNR/SSIM

Results for image170.bmp

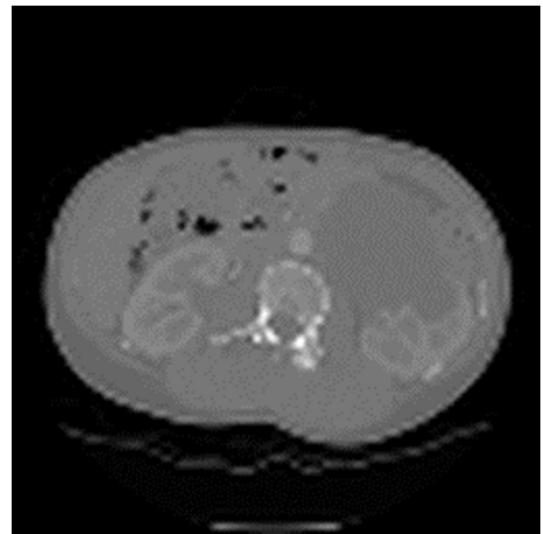
Method	PSNR	SSIM
Nearest Neighbor	27.68	.8757
Bicubic	29.97	.8821
SRCCN	34.02	.9309
Extended Patch	31.81	.7063
4 Neighbor	35.01	.9431
8 Neighbor	<b>35.11</b>	<b>.9463</b>

Nearest Neighbor



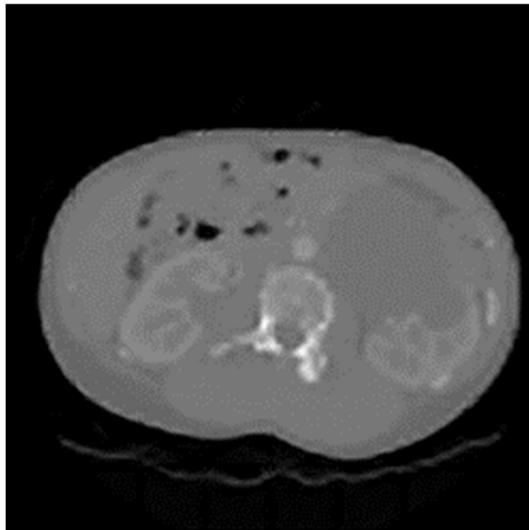
27.68/0.8757

Bicubic



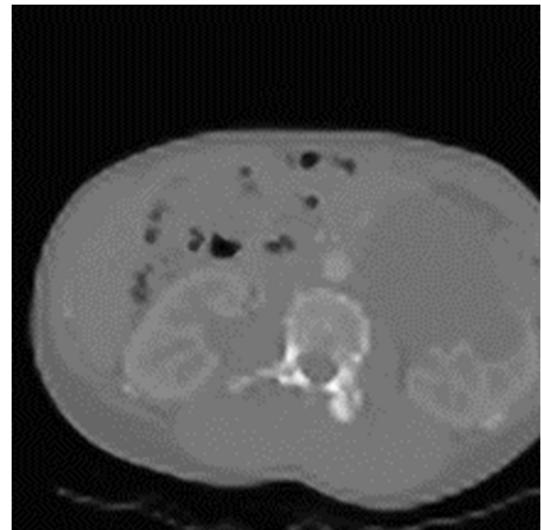
29.97/0.8821

SRCNN



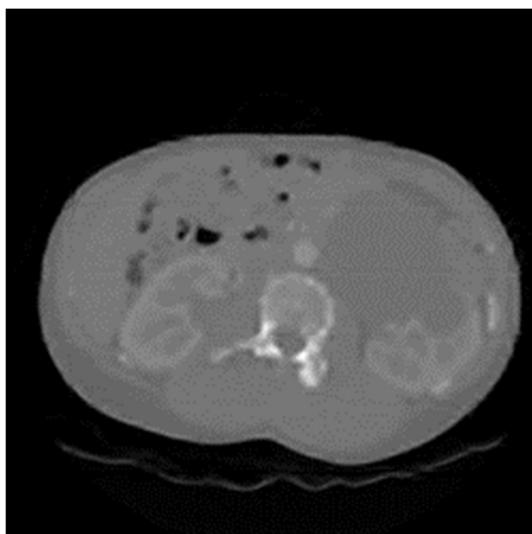
34.02/0.9309

E- SRCNN (Ours)



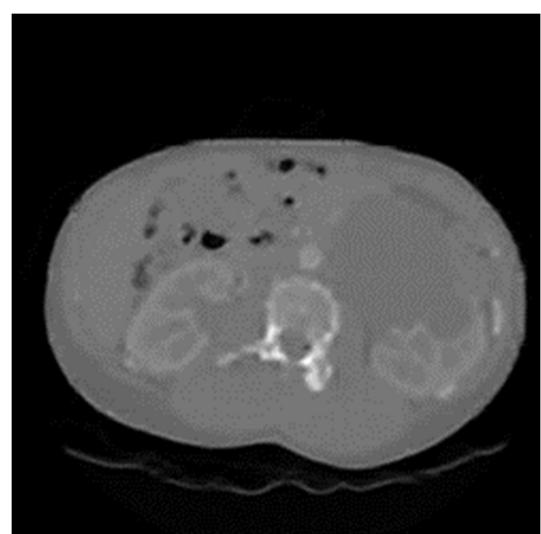
31.81/0.7063

C5 C-SRCNN (Ours)



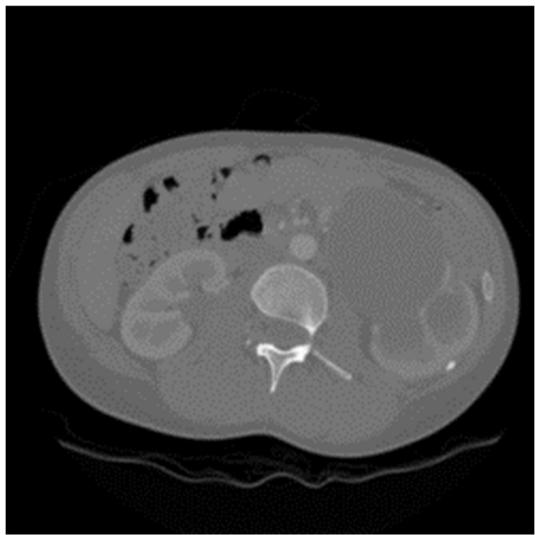
35.01/0.9431

C9 C-SRCNN (Ours)



**35.11/0.9463**

Original

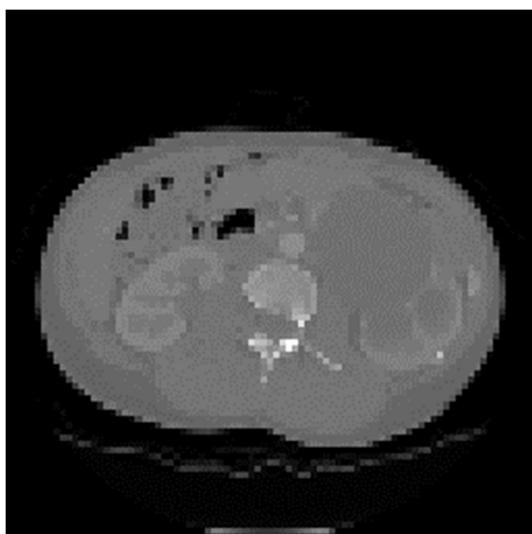


PSNR/SSIM

Results for image188.bmp

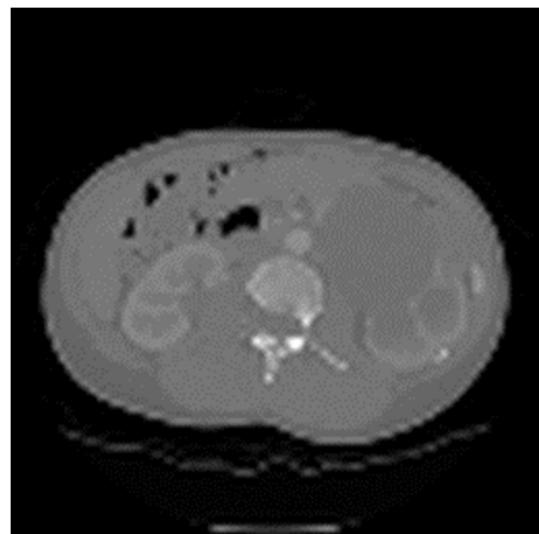
Method	PSNR	SSIM
Nearest Neighbor	27.92	.8839
Bicubic	30.24	.8884
SRCCN	35.08	.9376
Extended Patch	32.03	.6974
4 Neighbor	35.85	.9484
8 Neighbor	<b>35.88</b>	<b>.9507</b>

Nearest Neighbor



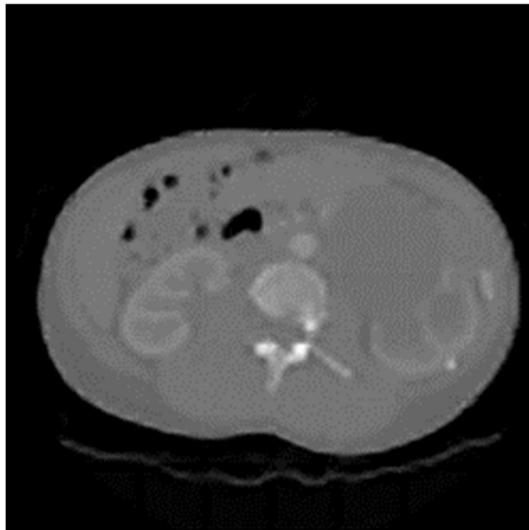
27.92/0.8839

Bicubic



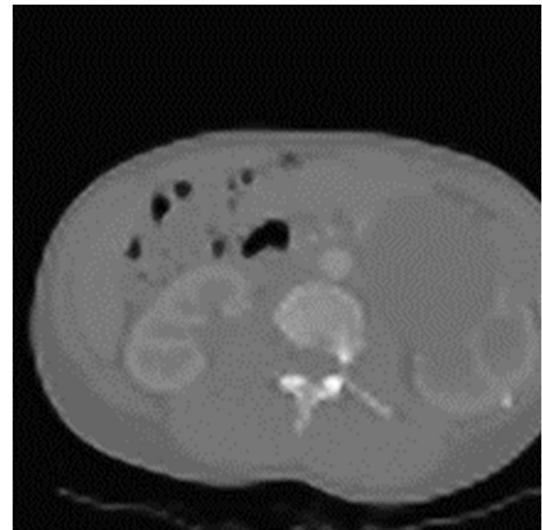
30.24/0.8884

SRCNN



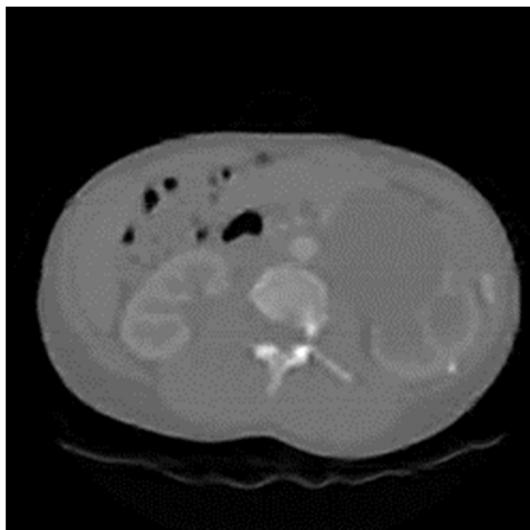
35.08/0.9376

E- SRCNN (Ours)



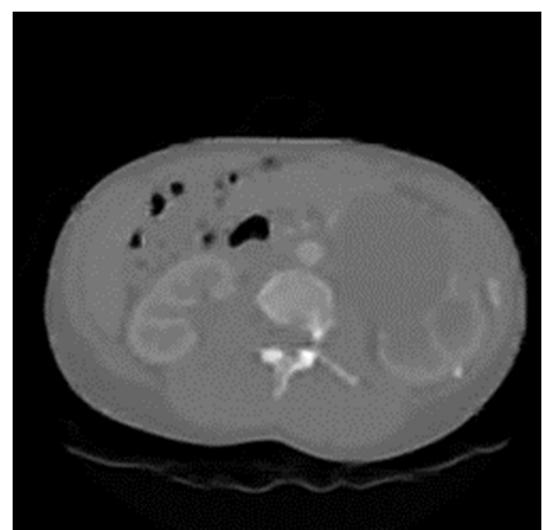
32.03/0.6974

C5 C-SRCNN (Ours)



35.85/0.9484

C9 C-SRCNN (Ours)



**35.88/0.9507**

# Radiologist Evaluations

In a survey aiming to evaluate the real-world applications of our model, we randomized the order of images generated by various super-resolution methods and asked for radiologists to rank the images based on usefulness. Aggregated results had C-SRCNN place first and SRCNN far behind. In general, subjective comments stated that images generated by C-SRCNN have greater contrast, sharper margins, and less noise, all of which greatly increase the quality of patient care. The following pages consist of evaluations of the images that various super-resolution methods produced by medical professionals. The table below summarizes our subjective scores, with 1 being the best image and 3 being the worst.

Radiologist	Image Set	Ranking		
		Bicubic	SRCCN	C-SRCCN
1	Average	1.75	2.50	1.75
	1	1	3	2
	2	3	1	2
	3	2	3	1
	4	1	3	2
2	Average	1.50	2.50	2.00
	1	1	3	2
	2	3	2	1
	3	1	2	3
	4	1	3	2
3	Average	2.00	2.50	1.50
	1	1	3	2
	2	3	2	1
	3	3	2	1
	4	1	3	2
4	Average	3.00	1.50	1.50
	1	3	1	2
	2	3	2	1
	3	3	2	1
	4	3	1	2
Overall		2.0625	2.2500	1.6875

# Mean Opinion Score Survey

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Please sign your name below as confirmation the survey was answered honestly and without bias. We appreciate your support.

1	High Quality
2	Medium Quality
3	Lowest Quality

Sami Khan, M.D.

---

Printed Name  
Regional Medical Imaging

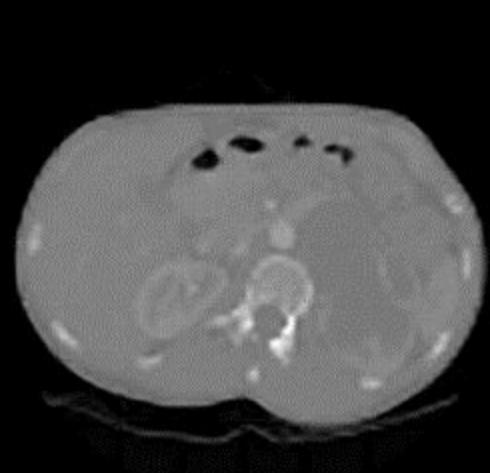
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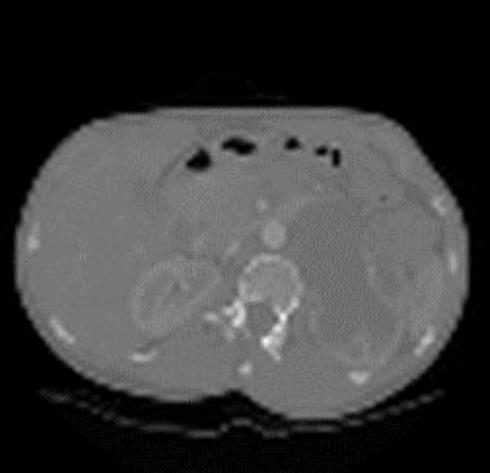
Institution  
*Sami Khan*

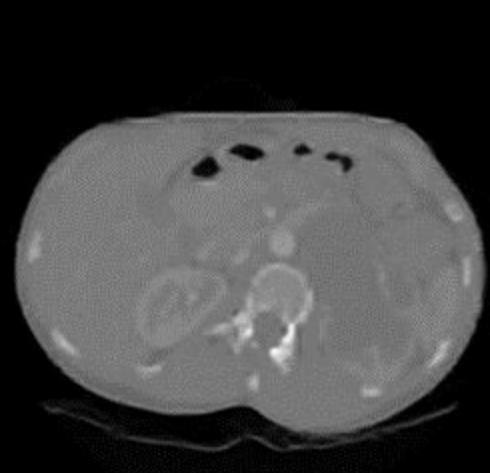
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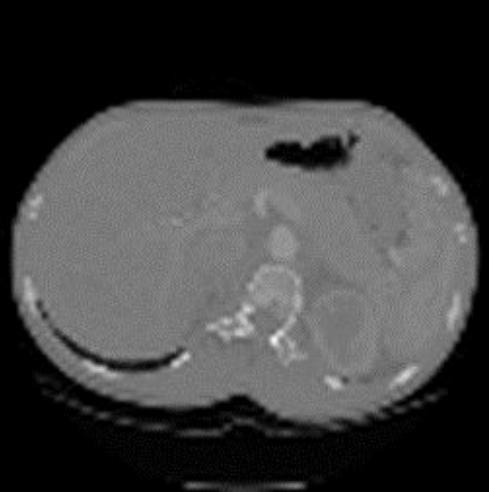
Signature

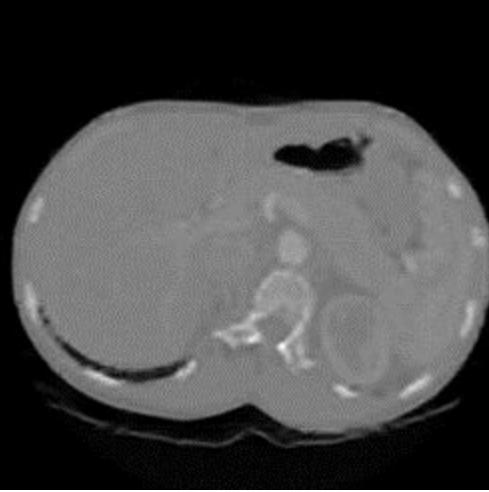
[1] Dong, Chao, et al. "Image super-resolution using deep convolutional networks." *IEEE transactions on pattern analysis and machine intelligence* 38.2 (2016): 295-307.

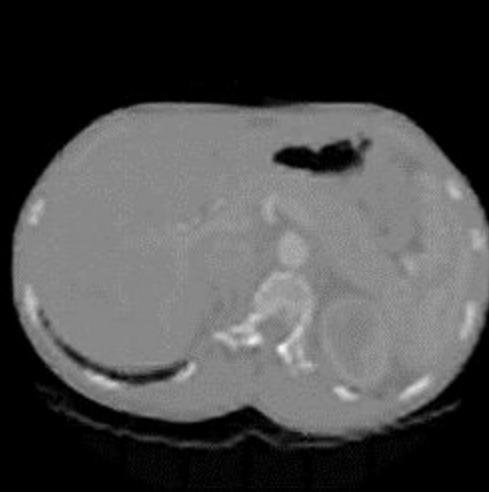
	Score: 3	Subjective Comments:  Very grainy image. Ribs are blurry and lot of dark pixels (noise) in abdomen
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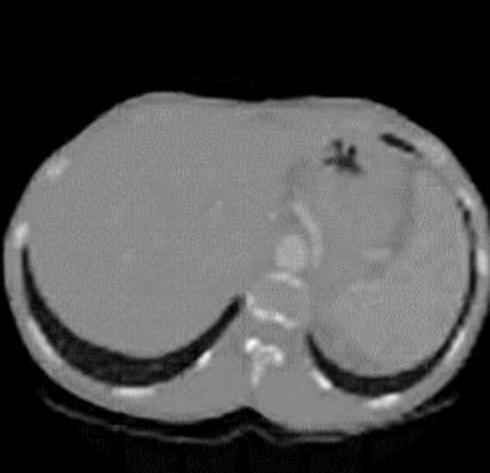
	Score: 1	Subjective Comments:  Best appearing of the 3. Looks like a smoothing algorithm was applied to this image
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	Score: 2	Subjective Comments:  Slightly better than rank #3 and slightly worse than rank #1 noise more apparent than #1.
---	-------------	---

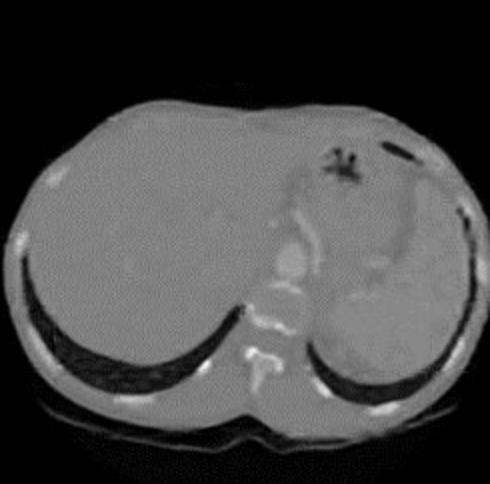
	Score: 3	Subjective Comments: <p>This image has the most amount of noise as is evidenced by the graniness</p>
---	-------------	---

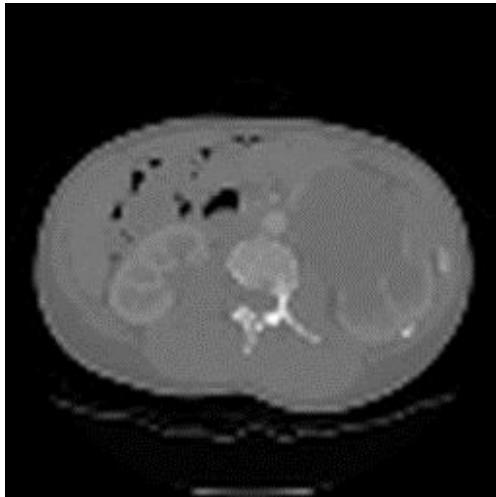
	Score: 2	Subjective Comments: <p>Noise is apparent here (more than image rank #1) but less than image rank #3</p>
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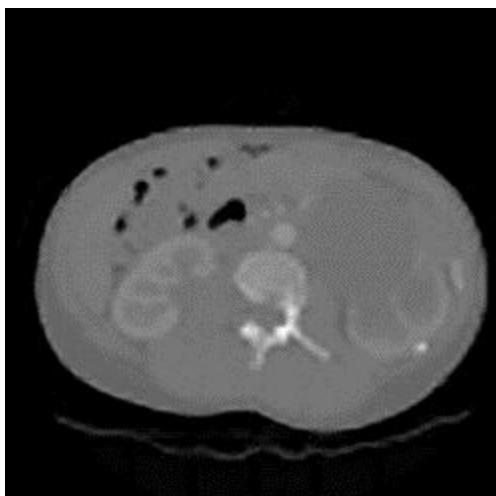
	Score: 1	Subjective Comments: <p>Can see the portal vein extending in the liver the best. Least amount of noise than the other 2</p>
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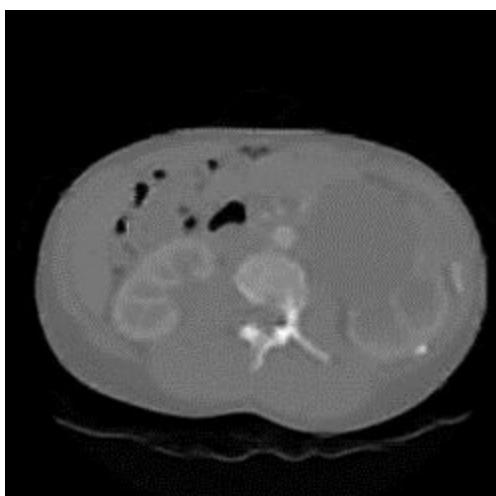
	Score: 1	Subjective Comments:  The lesions in the spleen (whether they are true lesions or related to perfusion phenomena) are best apparent on this image. Therefore contrast resolution is best here. Images also appear brightest
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	Score: 2	Subjective Comments:  Can see the splenic lesions but less clear than #1
--	-------------	--

	Score: 3	Subjective Comments:  Most difficult to appreciate the splenic lesions
---	-------------	--

	Score: 1	Subjective Comments:  This appears to have least amount of noise
---	-------------	--

	Score: 3	Subjective Comments:  Margins are the most blurry (noisy) in this image
--	-------------	---

	Score: 2	Subjective Comments:  Margins slightly less sharp than rank #1
---	-------------	--

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1	High Quality
2	Medium Quality
3	Lowest Quality

LING ZHUANG

Printed Name

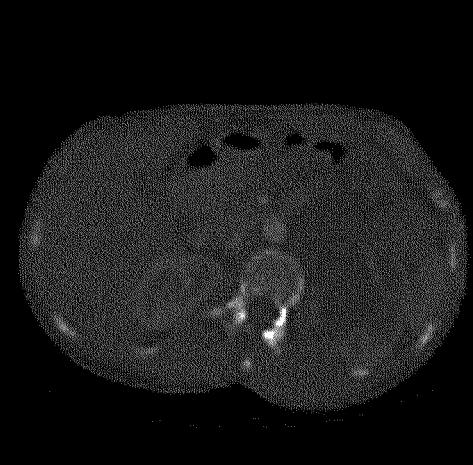
Northwestern Medicine

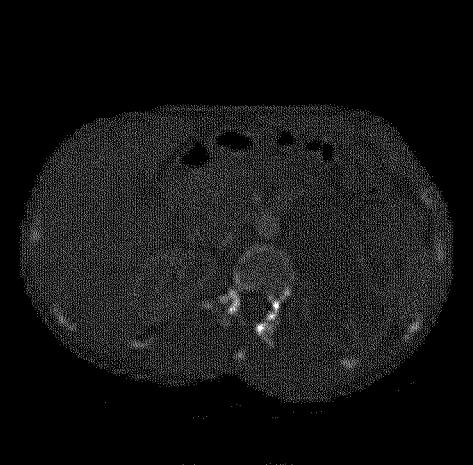
Institution

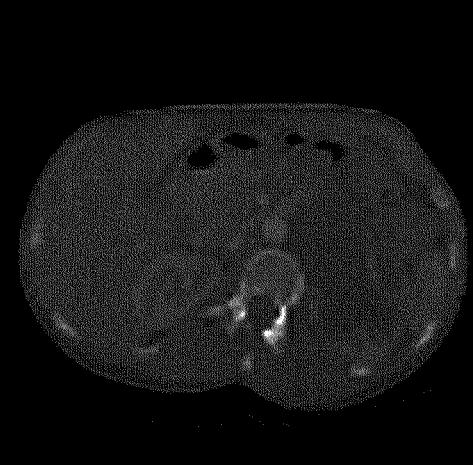
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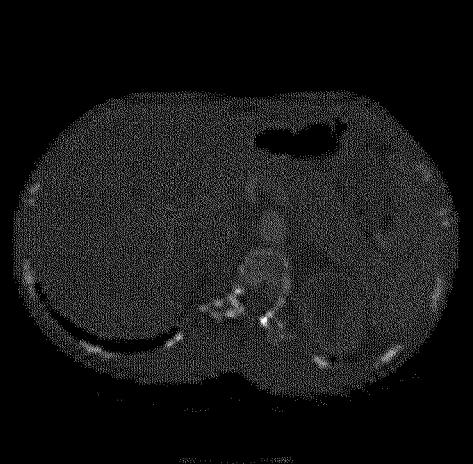
Signature

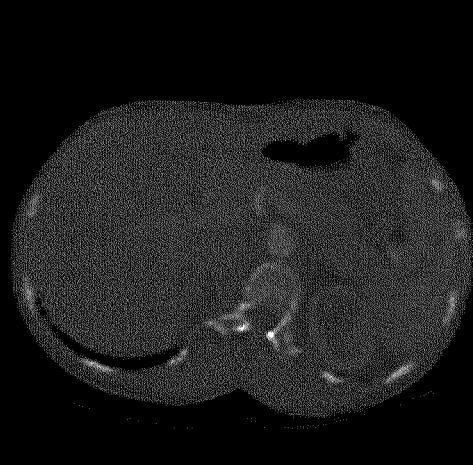
[1] Dong, Chao, et al. "Image super-resolution using deep convolutional networks." *IEEE transactions on pattern analysis and machine intelligence* 38.2 (2016): 295-307.

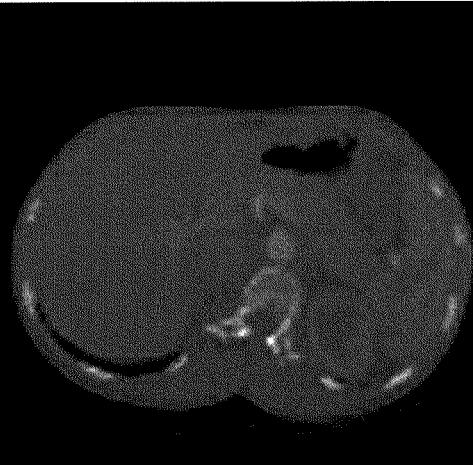
	Score:	Subjective Comments:
		3

	Score:	Subjective Comments:
		1

	Score:	Subjective Comments:
		2

	Score:	Subjective Comments:
		3

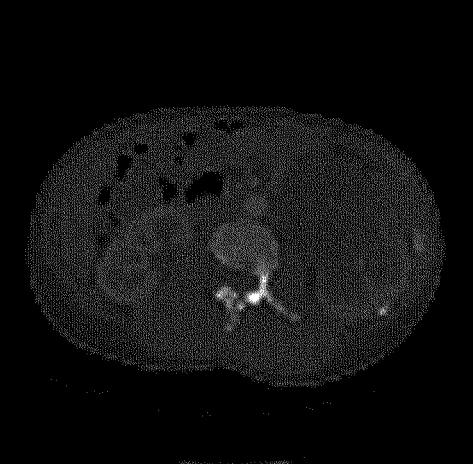
	Score:	Subjective Comments:
		1

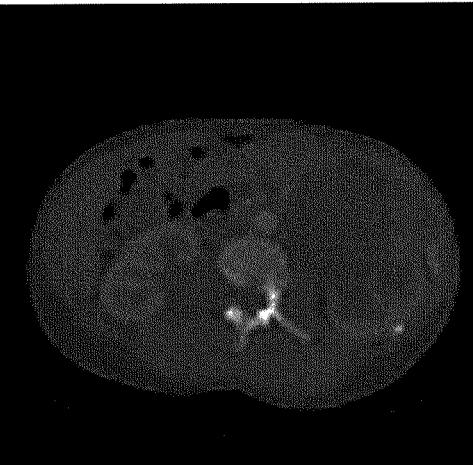
	Score:	Subjective Comments:
		2

	Score:	Subjective Comments:
		3

	Score:	Subjective Comments:
		1

	Score:	Subjective Comments:
		2

	Score:	Subjective Comments:

	Score:	Subjective Comments:
		3

	Score:	Subjective Comments:
		2

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2	Medium Quality
3	Lowest Quality

---

Printed Name

Dr. Ninad Shah

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Institution

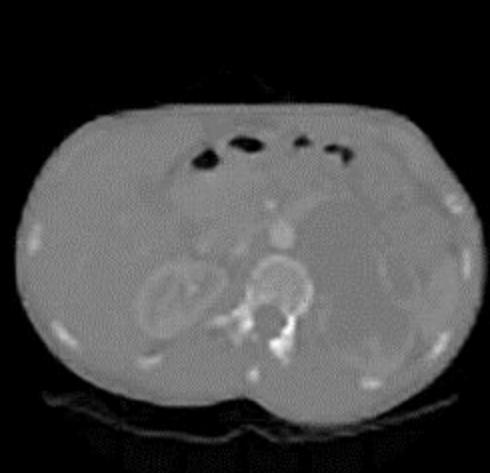
Rays X-ray and Sonography Clinic

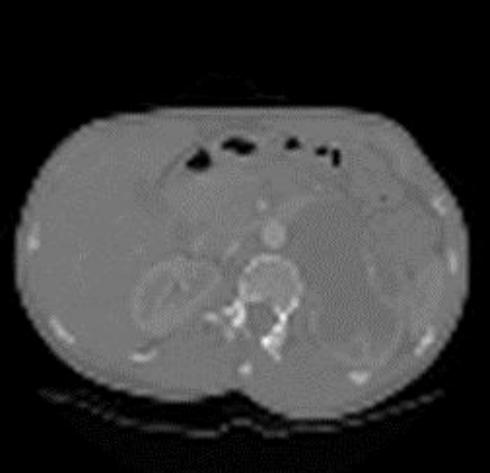
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Signature

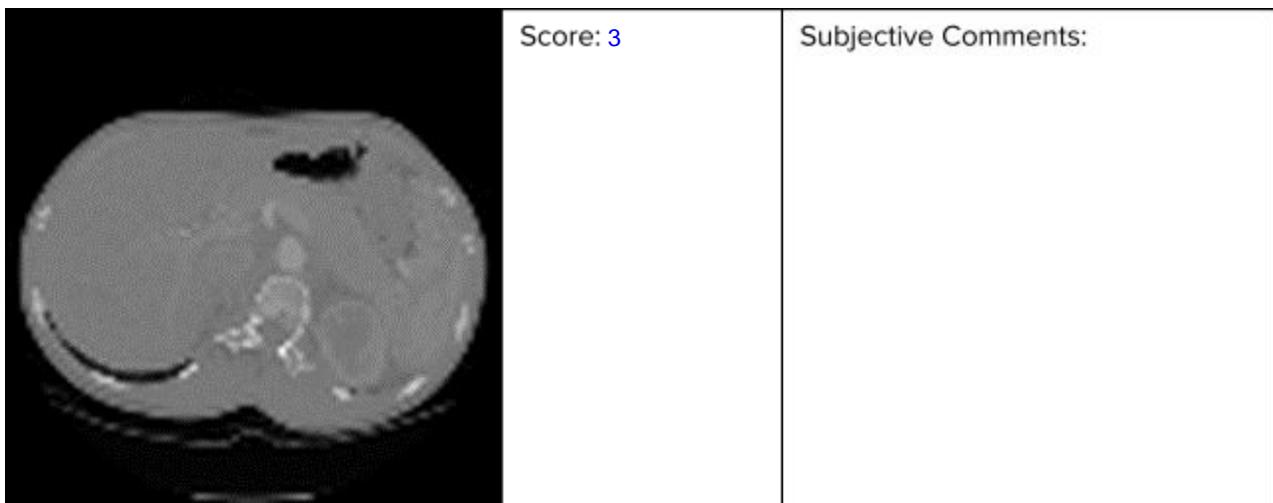


[1] Dong, Chao, et al. "Image super-resolution using deep convolutional networks." *IEEE transactions on pattern analysis and machine intelligence* 38.2 (2016): 295-307.

	Score: 1	Subjective Comments: Overall resolution, sharpness, contrast and clarity are best among the three
---	-------------	--

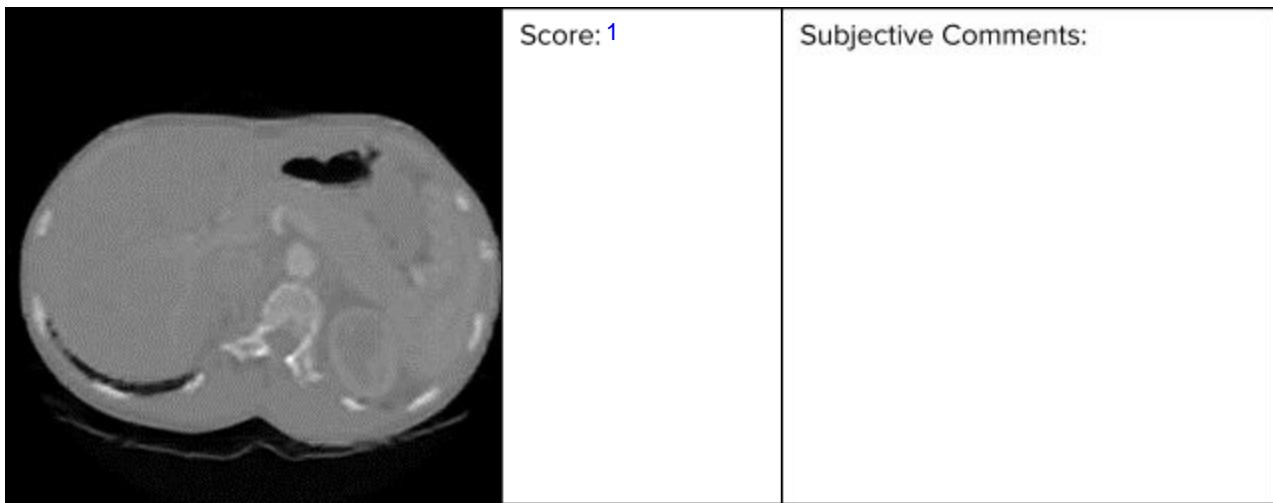
	Score: 3	Subjective Comments: Resolution is worst among the 3
--	----------	---

	Score: 2	Subjective Comments: Closer to the first image, but the first image looks better overall
---	----------	---



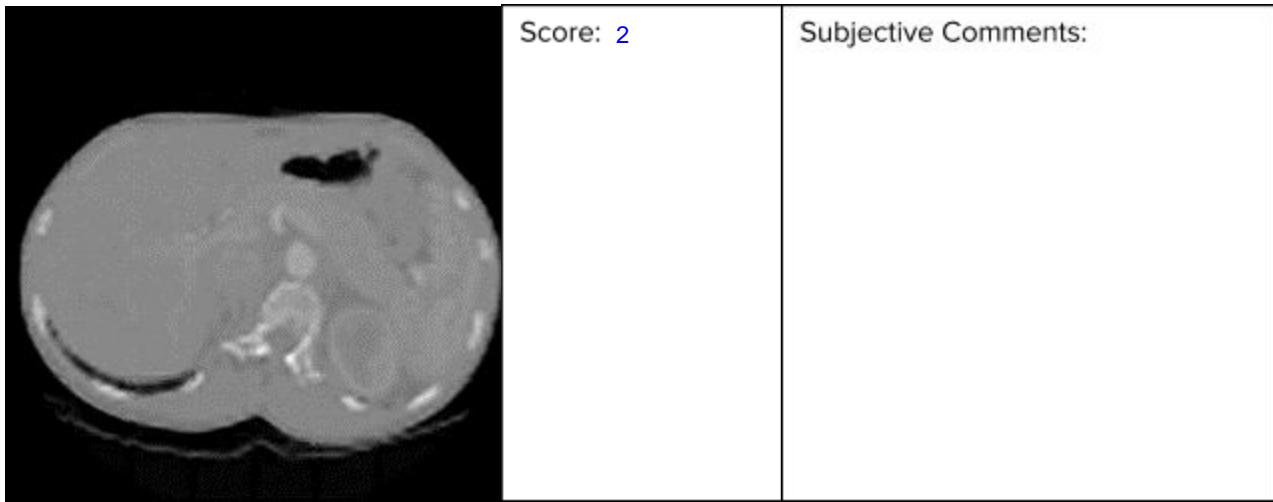
Score: 3

Subjective Comments:



Score: 1

Subjective Comments:



Score: 2

Subjective Comments:



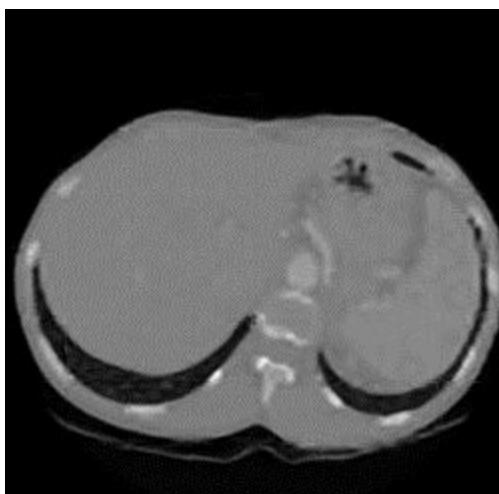
Score: 1

Subjective Comments:



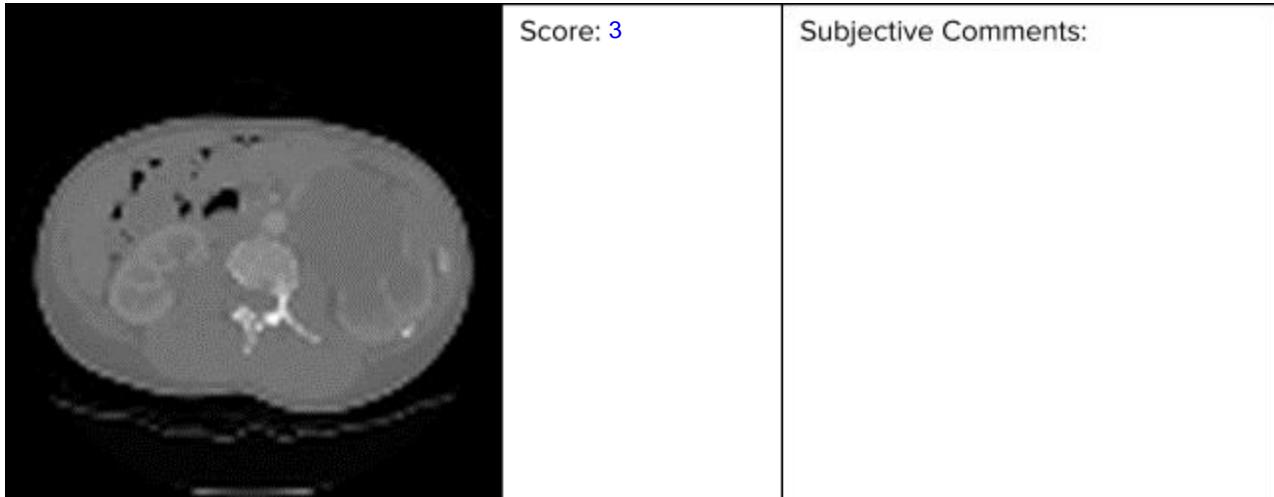
Score: 3

Subjective Comments:



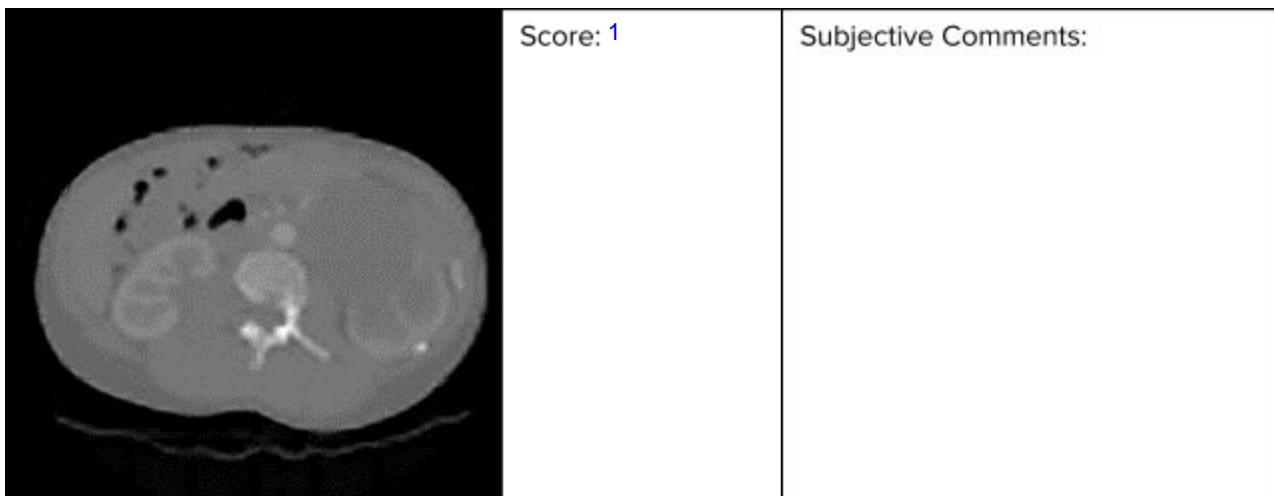
Score: 2

Subjective Comments:



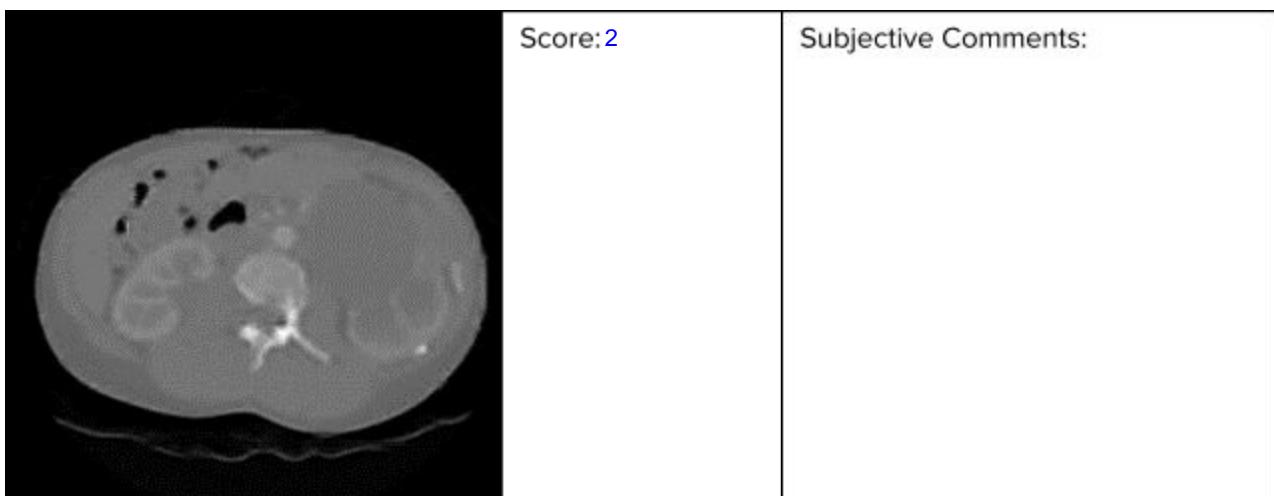
Score: 3

Subjective Comments:



Score: 1

Subjective Comments:



Score: 2

Subjective Comments: