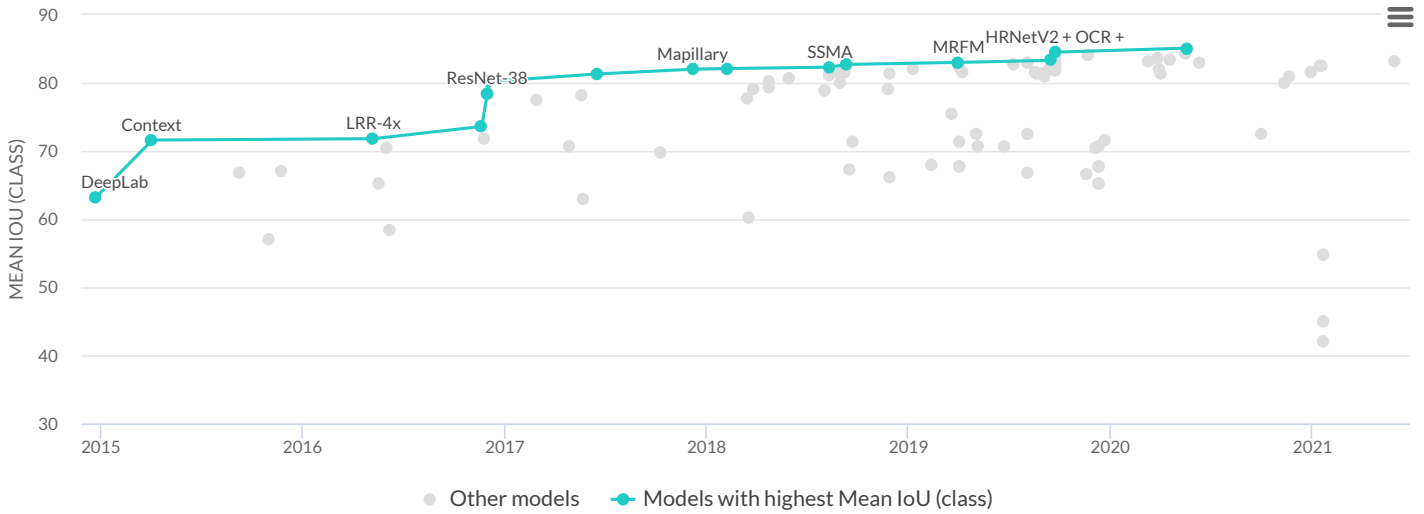




Semantic Segmentation on Cityscapes test

[Leaderboard](#) [Dataset](#)

View **Mean IoU (class)** by **Date** for **All models**



Filter: ResNet hrnet GCN D3Net untagged

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Rank	Model	Mean ↑ IoU (class)	Category mIoU	Extra Training Data	Paper	Code	Result	Year	Tags
1	HRNet-OCR (Hierarchical Multi-scale Attention)	85.1%		✓	Hierarchical Multi-Scale Attention for Semantic Segmentation			2020	hrnet
2	HRNetV2+OCR+	84.5%		✓	Segmentation Transformer: Object-Contextual Representations for Semantic Segmentation			2019	hrnet
3	EfficientPS	84.21%		✓	EfficientPS: Efficient Panoptic Segmentation			2020	
4	Panoptic-DeepLab	84.2%		✓	Panoptic-DeepLab: A Simple, Strong, and Fast Baseline for Bottom-Up Panoptic Segmentation			2019	

[Segmentation Transformer:](#)

5	HRNetV2 + OCR (w/ASP)	83.7%	✓	Object-Contextual Representations for Semantic Segmentation			2019	hrnet
6	DCNAS	83.6%	×	DCNAS: Densely Connected Neural Architecture Search for Semantic Image Segmentation			2020	
7	GALDNet (+Mapillary)	83.3%	×	Global Aggregation then Local Distribution in Fully Convolutional Networks			2019	
8	ResNeSt200	83.3	×	ResNeSt: Split-Attention Networks			2020	
9	HANet (Height-driven Attention Networks by LGE A&B)	83.2%	×	Cars Can't Fly up in the Sky: Improving Urban-Scene Segmentation via Height-driven Attention Networks			2020	
10	SegFormer (MiT-B5, Mapillary)	83.1%	×	SegFormer: Simple and Efficient Design for Semantic Segmentation with Transformers			2021	
11	OCR (HRNetV2-W48, coarse)	83.0%	×	Segmentation Transformer: Object-Contextual Representations for Semantic Segmentation			2019	hrnet
12	MRFM	83.0%	×	Multi Receptive Field Network for Semantic Segmentation			2019	
13	DNL (ours)	83%	×	Disentangled Non-Local Neural Networks			2020	
14	DRAN (ResNet-101)	82.9%	×	Scene Segmentation with Dual Relation-aware Attention Network			2019	ResNet
15	Gated-SCNN	82.8%	×	Gated-SCNN: Gated Shape CNNs for Semantic Segmentation			2019	
16	Dense Prediction Cell	82.7%	×	Searching for Efficient Multi-Scale Architectures for Dense Image Prediction			2018	
17	CAA (ResNet-101)	82.6%	×	Channelized Axial Attention for Semantic Segmentation -- Considering Channel Relation within Spatial			2021	ResNet










[Attention for Semantic Segmentation](#)

18	OCR (ResNet-101, coarse)	82.4%	×	Segmentation Transformer: Object-Contextual Representations for Semantic Segmentation			2019	ResNet
19	DDRNet-39 1.5x	82.4%	×	Deep Dual-resolution Networks for Real-time and Accurate Semantic Segmentation of Road Scenes			2021	
20	SSMA	82.3%	×	Self-Supervised Model Adaptation for Multimodal Semantic Segmentation			2018	
21	Gated Fully Fusion	82.3%	×	GFF: Gated Fully Fusion for Semantic Segmentation			2019	
22	DeepLabv3+ (Xception-JFT)	82.1%	×	Encoder-Decoder with Atrous Separable Convolution for Semantic Image Segmentation			2018	
23	Auto-DeepLab-L	82.1%	×	Auto-DeepLab: Hierarchical Neural Architecture Search for Semantic Image Segmentation			2019	
24	Mapillary	82.0%	×	In-Place Activated BatchNorm for Memory-Optimized Training of DNNs			2017	
25	DGCNet (ResNet-101)	82%	×	Dual Graph Convolutional Network for Semantic Segmentation			2019	GCN ResNet
26	SPNet (ResNet-101)	82.0%	×	Strip Pooling: Rethinking Spatial Pooling for Scene Parsing			2020	ResNet
27	OCR (ResNet-101)	81.8%	×	Segmentation Transformer: Object-Contextual Representations for Semantic Segmentation			2019	ResNet
28	OCNet	81.7%	×	OCNet: Object Context Network for Scene Parsing			2018	

[Rethinking Semantic](#)

29	<u>SETR-PUP++</u>	81.64%	×	Segmentation from a Sequence-to-Sequence Perspective with Transformers			2020	
30	<u>HRNet</u> (HRNetV2-W48)	81.6%	×	High-Resolution Representations for Labeling Pixels and Regions			2019	hrnet
31	<u>HRNetV2</u> (train+val)	81.6	×	Deep High-Resolution Representation Learning for Visual Recognition			2019	hrnet
32	<u>DANet</u> (ResNet-101)	81.5%	×	Dual Attention Network for Scene Segmentation			2018	ResNet
33	<u>CCNet</u>	81.4%	×	CCNet: Criss-Cross Attention for Semantic Segmentation			2018	
34	<u>PSANet</u> (ResNet-101)	81.4%	×	PSANet: Point-wise Spatial Attention Network for Scene Parsing			2018	ResNet
35	<u>BFP</u>	81.4%	×	Boundary-Aware Feature Propagation for Scene Segmentation			2019	
36	<u>DeepLabv3</u> (ResNet-101, coarse)	81.3%	✓	Rethinking Atrous Convolution for Semantic Image Segmentation			2017	ResNet
37	<u>CPN</u> (ResNet-101)	81.3%	×	Context Prior for Scene Segmentation			2020	ResNet
38	<u>Asymmetric ALNN</u>	81.3%	×	Asymmetric Non-local Neural Networks for Semantic Segmentation			2019	
39	<u>AdapNet++</u>	81.24%	✓	Self-Supervised Model Adaptation for Multimodal Semantic Segmentation			2018	
40	<u>SVCNet</u> (ResNet-101)	81.0%	×	Semantic Correlation Promoted Shape-Variant Context for Segmentation			2019	ResNet
41	<u>D3Net-L</u>	80.8%	×	Densely connected multidilated convolutional networks for dense prediction tasks			2020	D3Net
	<u>DenseASPP</u>			DenseASPP for Semantic				











42	(DenseNet-161)	80.6%	×	Segmentation in Street Scenes			2018	
43	Smooth Network with Channel Attention Block	80.3%	×	Learning a Discriminative Feature Network for Semantic Segmentation			2018	
44	PSPNet++	80.2%	×	Pyramid Scene Parsing Network			2016	
45	PSANet (ResNet-101)	80.1%	×	PSANet: Point-wise Spatial Attention Network for Scene Parsing			2018	<input type="button" value="ResNet"/>
46	ESANet-R34-NBt1D	80.09%	×	Efficient RGB-D Semantic Segmentation for Indoor Scene Analysis			2020	
47	DFN (ResNet-101)	79.3%	×	Learning a Discriminative Feature Network for Semantic Segmentation			2018	<input type="button" value="ResNet"/>
48	AAF (ResNet-101)	79.1%	×	Adaptive Affinity Fields for Semantic Segmentation			2018	<input type="button" value="ResNet"/>
49	ShelfNet-34	79.0%	×	ShelfNet for Fast Semantic Segmentation			2018	
50	BiSeNet (ResNet-101)	78.9%	×	BiSeNet: Bilateral Segmentation Network for Real-time Semantic Segmentation			2018	<input type="button" value="ResNet"/>
51	ResNet-38	78.4%	✓	Wider or Deeper: Revisiting the ResNet Model for Visual Recognition			2016	<input type="button" value="ResNet"/>
52	PSPNet	78.4%	×	Pyramid Scene Parsing Network			2016	
53	DepthSeg (ResNet-101)	78.2%	×	Recurrent Scene Parsing with Perspective Understanding in the Loop			2017	<input type="button" value="ResNet"/>
54	DSSPN (ResNet-101)	77.8%	×	Dynamic-structured Semantic Propagation Network			2018	<input type="button" value="ResNet"/>
55	DUC-HDC (ResNet-101)	77.6%	×	Understanding Convolution for Semantic Segmentation			2017	<input type="button" value="ResNet"/>
				In Defense of Pre-trained ImageNet Architectures for				

56	<u>SwiftNetRN-18</u>	75.5%		×	Real-time Semantic Segmentation of Road-driving Images			2019	
57	<u>RefineNet</u> (ResNet-101)	73.6%		×	RefineNet: Multi-Path Refinement Networks for High-Resolution Semantic Segmentation			2016	ResNet
58	<u>MobileNet V3-Large 1.0</u>	72.6%		✓	Searching for MobileNetV3			2019	
59	<u>SqueezeNAS</u> (LAT Large)	72.5%		×	SqueezeNAS: Fast neural architecture search for faster semantic segmentation			2019	
60	<u>Multi Scale Spatial Attention</u>	72.4%		×	Semantic Segmentation With Multi Scale Spatial Attention For Self Driving Cars			2020	
61	<u>FRRN</u>	71.8%		×	Full-Resolution Residual Networks for Semantic Segmentation in Street Scenes			2016	
62	<u>LRR-4x</u>	71.8%		×	Laplacian Pyramid Reconstruction and Refinement for Semantic Segmentation			2016	
63	<u>Context</u>	71.6%		×	Efficient piecewise training of deep structured models for semantic segmentation			2015	
64	<u>FasterSeg</u>	71.5%		×	FasterSeg: Searching for Faster Real-time Semantic Segmentation			2019	
65	<u>DFANet A</u>	71.3%		×	DFANet: Deep Feature Aggregation for Real-Time Semantic Segmentation			2019	
66	<u>LDFNet</u>	71.3		×	Incorporating Luminance, Depth and Color Information by a Fusion-based Network for Semantic Segmentation			2018	
67	<u>LightSeg-DarkNet19</u>	70.75%	88.29	×	LiteSeg: A Novel Lightweight ConvNet for Semantic Segmentation			2019	
					ESNet: An Efficient Symmetric Network for				

68	ESNet	70.7%		×	Real-time Semantic Segmentation			2019	
69	ICNet	70.6%		×	ICNet for Real-Time Semantic Segmentation on High-Resolution Images			2017	
70	LEDNet	70.6%		×	LEDNet: A Lightweight Encoder-Decoder Network for Real-Time Semantic Segmentation			2019	
71	WASPnet (ours)	70.5%		×	Waterfall Atrous Spatial Pooling Architecture for Efficient Semantic Segmentation			2019	
72	DeepLab-CRF (ResNet-101)	70.4%		✓	DeepLab: Semantic Image Segmentation with Deep Convolutional Nets, Atrous Convolution, and Fully Connected CRFs			2016	ResNet
73	ERFNet (PyTorch)	69.8%		✓	ERFNet: Efficient Residual Factorized ConvNet for Real-time Semantic Segmentation			2017	
74	Fast-SCNN	68%		×	Fast-SCNN: Fast Semantic Segmentation Network			2019	
75	LightSeg-MobileNet	67.81%	86.79	×	LightSeg: A Novel Lightweight ConvNet for Semantic Segmentation			2019	
76	LiteSeg-MobileNet	67.81%		×	LiteSeg: A Novel Lightweight ConvNet for Semantic Segmentation			2019	
77	Template-Based NAS-arch1	67.8%		×	Template-Based Automatic Search of Compact Semantic Segmentation Architectures			2019	
78	Template-Based NAS-arch0	67.7%		×	Template-Based Automatic Search of Compact Semantic Segmentation Architectures			2019	
79	EDANet	67.3		×	Efficient Dense Modules of Asymmetric Convolution for Real-Time Semantic Segmentation			2018	

80	Dilation10	67.1%		×	Multi-Scale Context Aggregation by Dilated Convolutions			2015
81	DPN	66.8%		×	Semantic Image Segmentation via Deep Parsing Network			2015
82	SqueezeNAS (LAT Small)	66.8%		×	SqueezeNAS: Fast neural architecture search for faster semantic segmentation			2019
83	SINet	66.5%		×	SINet: Extreme Lightweight Portrait Segmentation Networks with Spatial Squeeze Modules and Information Blocking Decoder			2019
84	ESPNetv2	66.2%		×	ESPNetv2: A Light-weight, Power Efficient, and General Purpose Convolutional Neural Network			2018
85	FCN	65.3%		✓	Fully Convolutional Networks for Semantic Segmentation			2016
86	LightSeg-ShuffleNet	65.17%	85.39	×	LightSeg: A Novel Lightweight ConvNet for Semantic Segmentation			2019
87	LiteSeg-ShuffleNet	65.17%		×	LiteSeg: A Novel Lightweight ConvNet for Semantic Segmentation			2019
88	DeepLab	63.1%		✓	Semantic Image Segmentation with Deep Convolutional Nets and Fully Connected CRFs			2014
89	ENet + Lovász-Softmax	63.06%		×	The Lovász-Softmax loss: A tractable surrogate for the optimization of the intersection-over-union measure in neural networks			2017
90	ESPNet	60.3%		×	ESPNet: Efficient Spatial Pyramid of Dilated Convolutions for Semantic Segmentation			2018

[ENet: A Deep Neural](#)

91	<u>ENet</u>	58.3%		×	Network Architecture for Real-Time Semantic Segmentation			2016
92	<u>SegNet</u>	57.0%		✓	SegNet: A Deep Convolutional Encoder-Decoder Architecture for Image Segmentation			2015
93	<u>IkshanaNet-1</u>	54.82%	82.22%	×	The Ikshana Hypothesis of Human Scene Understanding Mechanism			2021
94	<u>IkshanaNet-2</u>	45.02%	76.73%	×	The Ikshana Hypothesis of Human Scene Understanding Mechanism			2021
95	<u>IkshanaNet-3</u>	42.07%	75.61%	×	The Ikshana Hypothesis of Human Scene Understanding Mechanism			2021

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