

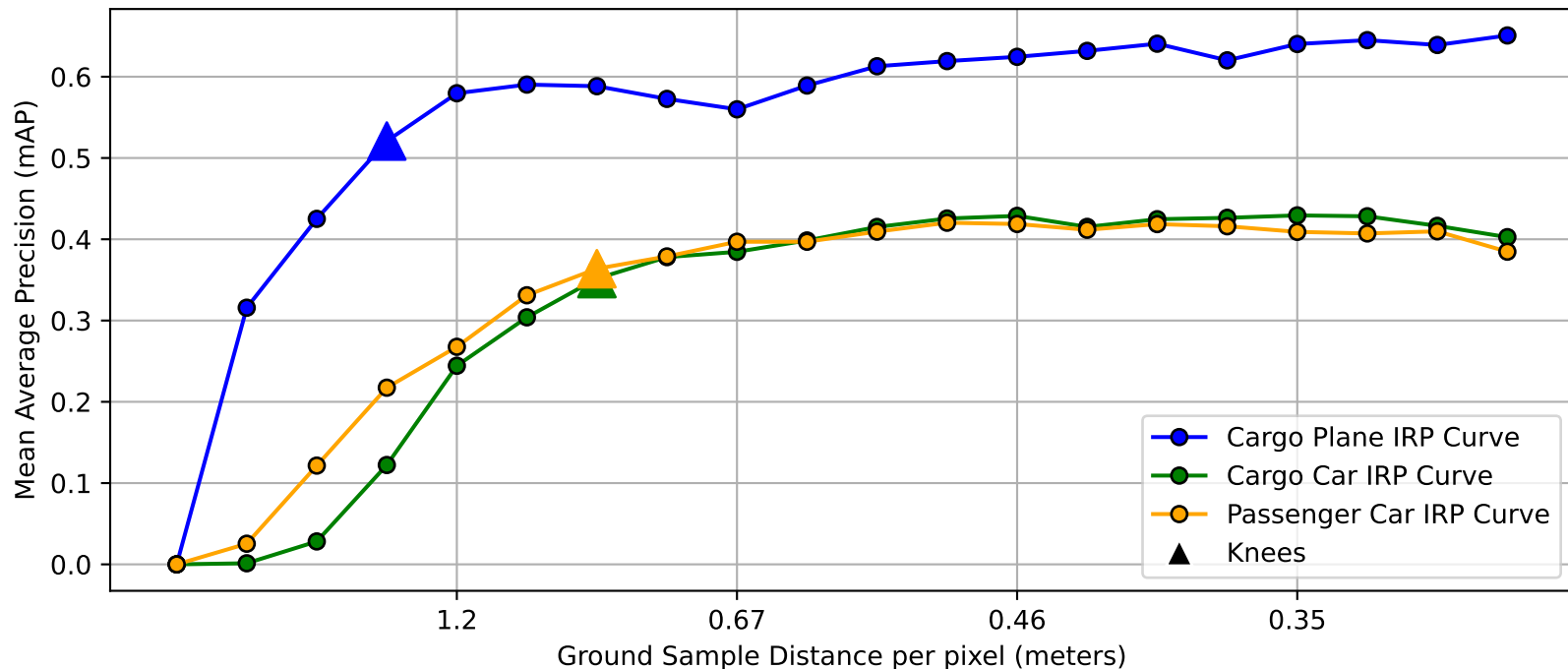
Mean Average Precision (mAP), Ground Sample Distance (GSD), and Pixels On Target for detection of all classes at knee

Object Class	mAP	GSD (meters)	Pixels on Target
Cargo Plane	0.521	1.50	585
Straddle Carrier	0.398	1.00	1239
Passenger Car	0.364	0.86	209
Cargo Car	0.352	0.86	133
Ferry	0.344	0.50	3714
Yacht	0.341	0.50	1154
Fixed-wing Aircraft	0.332	0.60	881
Small Aircraft	0.325	0.35	1147
Excavator	0.294	0.55	230
Truck w/Box	0.280	0.67	258
Tugboat	0.268	0.55	1379
Bus	0.257	0.50	185
Front loader/Bulldozer	0.232	0.40	308
Small Car	0.209	0.55	59
Sailboat	0.168	0.60	205
Tank car	0.152	0.50	339
Railway Vehicle	0.152	0.50	639
Truck	0.145	0.50	189
Barge	0.136	1.00	1305
Container Ship	0.131	0.50	16910
Dump Truck	0.130	0.50	211
Reach Stacker	0.123	0.50	397
Locomotive	0.123	0.43	889
Maritime Vessel	0.121	1.00	1117
Motorboat	0.100	0.55	160
Crane Truck	0.098	0.50	386
Helicopter	0.093	0.60	484
Passenger Vehicle	0.090	0.50	70
Truck w/Flatbed	0.087	0.43	495
Flat Car	0.084	0.33	1135
Trailer	0.082	0.43	414
Tower crane	0.079	0.43	7380
Cement Mixer	0.074	0.50	197
Oil Tanker	0.066	1.20	2644
Cargo Truck	0.059	0.43	255
Shipping Container	0.057	0.67	145
Fishing Vessel	0.054	0.35	1930
Mobile Crane	0.050	0.32	5584
Truck w/Liquid	0.036	0.55	299
Engineering Vehicle	0.032	0.40	998
Utility Truck	0.027	0.50	106
Truck Tractor	0.023	0.32	485
Container Crane	0.017	0.67	4454
Ground Grader	0.015	0.32	556

Hyperparameters used

Image Preprocessing Method	tiling
Image Size	640
Stride	100
Learning Model	yolov8m
yolov8m: cls	1.5
yolov8m: imgsz	640
yolov8m: epochs	100
yolov8m: batch	16
yolov8m: freeze	[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14]

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Cargo Plane

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	37	No
640	640	64	64	0.316	3.00	147	No
640	640	96	96	0.425	2.00	329	No
640	640	128	128	0.521	1.50	585	Yes
640	640	160	160	0.580	1.20	914	No
640	640	192	192	0.590	1.00	1315	No
640	640	224	224	0.588	0.86	1790	No
640	640	256	256	0.573	0.75	2338	No
640	640	288	288	0.560	0.67	2959	No
640	640	320	320	0.589	0.60	3653	No
640	640	352	352	0.613	0.55	4420	No
640	640	384	384	0.619	0.50	5260	No
640	640	416	416	0.624	0.46	6173	No
640	640	448	448	0.632	0.43	7159	No
640	640	480	480	0.641	0.40	8218	No
640	640	512	512	0.620	0.38	9350	No
640	640	544	544	0.640	0.35	10556	No
640	640	576	576	0.645	0.33	11834	No
640	640	608	608	0.639	0.32	13185	No
640	640	640	640	0.651	0.30	14609	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Cargo Car

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.001	3.00	11	No
640	640	96	96	0.028	2.00	25	No
640	640	128	128	0.122	1.50	44	No
640	640	160	160	0.244	1.20	68	No
640	640	192	192	0.304	1.00	98	No
640	640	224	224	0.352	0.86	133	Yes
640	640	256	256	0.378	0.75	174	No
640	640	288	288	0.385	0.67	220	No
640	640	320	320	0.399	0.60	271	No
640	640	352	352	0.415	0.55	328	No
640	640	384	384	0.426	0.50	391	No
640	640	416	416	0.429	0.46	458	No
640	640	448	448	0.415	0.43	532	No
640	640	480	480	0.425	0.40	610	No
640	640	512	512	0.426	0.38	694	No
640	640	544	544	0.429	0.35	784	No
640	640	576	576	0.428	0.33	879	No
640	640	608	608	0.416	0.32	979	No
640	640	640	640	0.403	0.30	1084	No

Legend:

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prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Passenger Car

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	5	No
640	640	64	64	0.025	3.00	18	No
640	640	96	96	0.122	2.00	39	No
640	640	128	128	0.217	1.50	69	No
640	640	160	160	0.268	1.20	107	No
640	640	192	192	0.331	1.00	154	No
640	640	224	224	0.364	0.86	209	Yes
640	640	256	256	0.379	0.75	273	No
640	640	288	288	0.397	0.67	346	No
640	640	320	320	0.397	0.60	426	No
640	640	352	352	0.409	0.55	516	No
640	640	384	384	0.420	0.50	614	No
640	640	416	416	0.419	0.46	720	No
640	640	448	448	0.412	0.43	835	No
640	640	480	480	0.419	0.40	959	No
640	640	512	512	0.416	0.38	1091	No
640	640	544	544	0.409	0.35	1232	No
640	640	576	576	0.407	0.33	1381	No
640	640	608	608	0.410	0.32	1538	No
640	640	640	640	0.385	0.30	1704	No

Legend:

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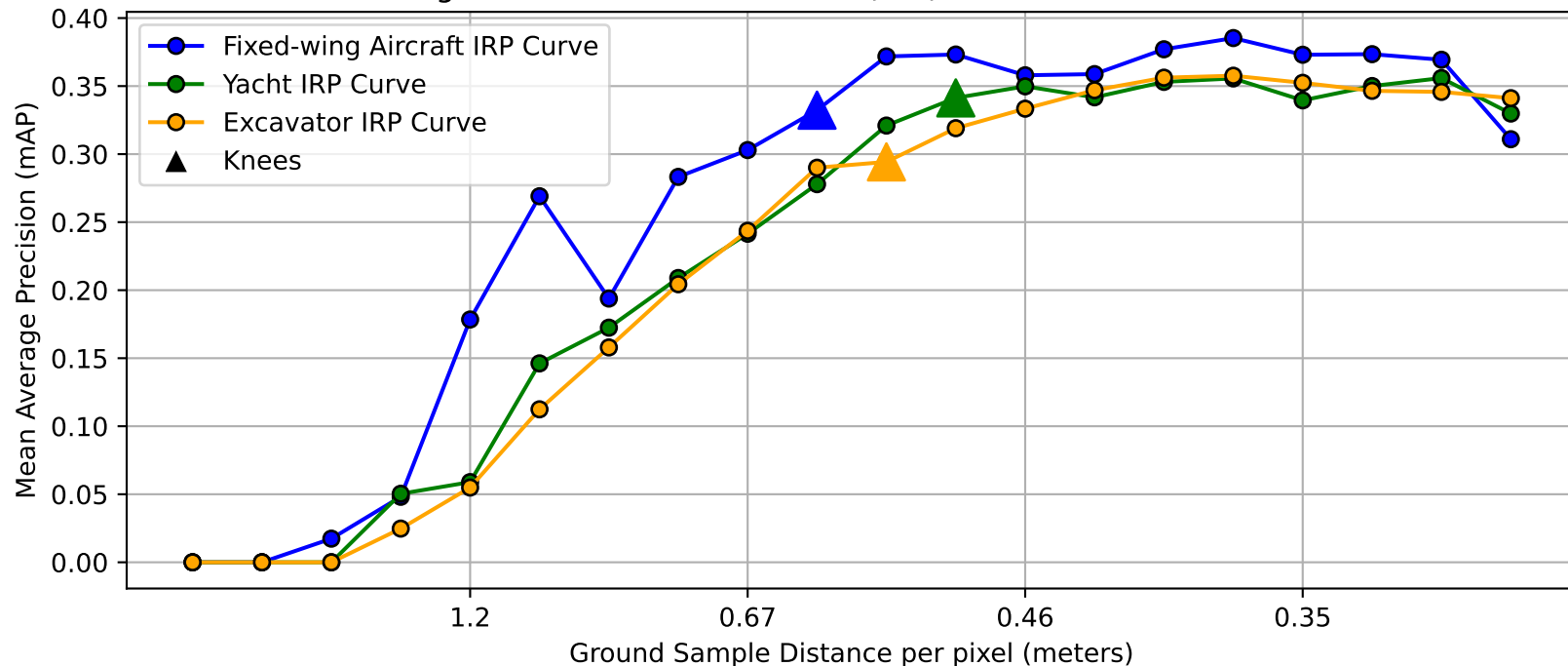
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Fixed-wing Aircraft

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	9	No
640	640	64	64	0.000	3.00	36	No
640	640	96	96	0.017	2.00	80	No
640	640	128	128	0.048	1.50	141	No
640	640	160	160	0.178	1.20	221	No
640	640	192	192	0.269	1.00	318	No
640	640	224	224	0.194	0.86	432	No
640	640	256	256	0.283	0.75	564	No
640	640	288	288	0.303	0.67	714	No
640	640	320	320	0.332	0.60	881	Yes
640	640	352	352	0.372	0.55	1067	No
640	640	384	384	0.373	0.50	1269	No
640	640	416	416	0.358	0.46	1489	No
640	640	448	448	0.359	0.43	1727	No
640	640	480	480	0.377	0.40	1983	No
640	640	512	512	0.385	0.38	2256	No
640	640	544	544	0.373	0.35	2547	No
640	640	576	576	0.373	0.33	2855	No
640	640	608	608	0.369	0.32	3181	No
640	640	640	640	0.311	0.30	3524	No

Legend:

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prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Yacht

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	9	No
640	640	64	64	0.000	3.00	33	No
640	640	96	96	0.000	2.00	73	No
640	640	128	128	0.050	1.50	129	No
640	640	160	160	0.059	1.20	201	No
640	640	192	192	0.146	1.00	289	No
640	640	224	224	0.172	0.86	393	No
640	640	256	256	0.209	0.75	513	No
640	640	288	288	0.241	0.67	650	No
640	640	320	320	0.278	0.60	802	No
640	640	352	352	0.321	0.55	970	No
640	640	384	384	0.341	0.50	1154	Yes
640	640	416	416	0.350	0.46	1355	No
640	640	448	448	0.342	0.43	1571	No
640	640	480	480	0.353	0.40	1803	No
640	640	512	512	0.356	0.38	2052	No
640	640	544	544	0.340	0.35	2316	No
640	640	576	576	0.350	0.33	2597	No
640	640	608	608	0.356	0.32	2893	No
640	640	640	640	0.330	0.30	3205	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Excavator

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	8	No
640	640	96	96	0.000	2.00	18	No
640	640	128	128	0.025	1.50	31	No
640	640	160	160	0.055	1.20	48	No
640	640	192	192	0.112	1.00	69	No
640	640	224	224	0.158	0.86	93	No
640	640	256	256	0.204	0.75	122	No
640	640	288	288	0.244	0.67	154	No
640	640	320	320	0.290	0.60	190	No
640	640	352	352	0.294	0.55	230	Yes
640	640	384	384	0.319	0.50	274	No
640	640	416	416	0.333	0.46	321	No
640	640	448	448	0.347	0.43	372	No
640	640	480	480	0.356	0.40	427	No
640	640	512	512	0.358	0.38	486	No
640	640	544	544	0.352	0.35	549	No
640	640	576	576	0.347	0.33	615	No
640	640	608	608	0.346	0.32	685	No
640	640	640	640	0.341	0.30	759	No

Legend:

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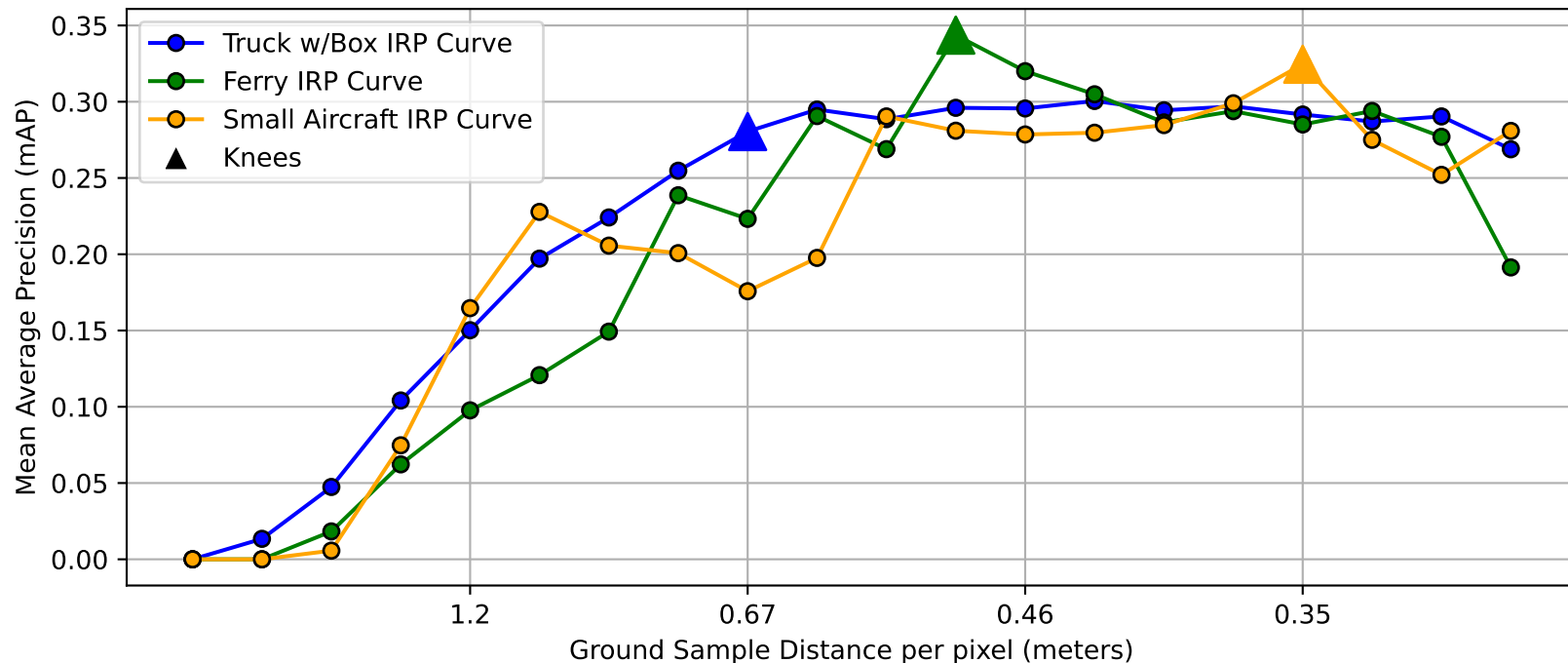
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

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Selected data for detection of Truck w/Box

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	4	No
640	640	64	64	0.013	3.00	13	No
640	640	96	96	0.047	2.00	29	No
640	640	128	128	0.104	1.50	51	No
640	640	160	160	0.150	1.20	80	No
640	640	192	192	0.197	1.00	115	No
640	640	224	224	0.224	0.86	156	No
640	640	256	256	0.255	0.75	204	No
640	640	288	288	0.280	0.67	258	Yes
640	640	320	320	0.295	0.60	318	No
640	640	352	352	0.289	0.55	385	No
640	640	384	384	0.296	0.50	458	No
640	640	416	416	0.296	0.46	537	No
640	640	448	448	0.300	0.43	623	No
640	640	480	480	0.294	0.40	715	No
640	640	512	512	0.297	0.38	814	No
640	640	544	544	0.292	0.35	919	No
640	640	576	576	0.287	0.33	1030	No
640	640	608	608	0.290	0.32	1148	No
640	640	640	640	0.269	0.30	1271	No

Legend:

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mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Ferry

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	26	No
640	640	64	64	0.000	3.00	104	No
640	640	96	96	0.018	2.00	233	No
640	640	128	128	0.062	1.50	413	No
640	640	160	160	0.098	1.20	645	No
640	640	192	192	0.121	1.00	929	No
640	640	224	224	0.149	0.86	1264	No
640	640	256	256	0.239	0.75	1651	No
640	640	288	288	0.223	0.67	2089	No
640	640	320	320	0.291	0.60	2579	No
640	640	352	352	0.269	0.55	3121	No
640	640	384	384	0.344	0.50	3714	Yes
640	640	416	416	0.320	0.46	4359	No
640	640	448	448	0.305	0.43	5055	No
640	640	480	480	0.286	0.40	5803	No
640	640	512	512	0.294	0.38	6603	No
640	640	544	544	0.285	0.35	7454	No
640	640	576	576	0.294	0.33	8356	No
640	640	608	608	0.277	0.32	9311	No
640	640	640	640	0.191	0.30	10316	No

Legend:

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mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Small Aircraft

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	4	No
640	640	64	64	0.000	3.00	16	No
640	640	96	96	0.006	2.00	36	No
640	640	128	128	0.075	1.50	64	No
640	640	160	160	0.165	1.20	100	No
640	640	192	192	0.228	1.00	143	No
640	640	224	224	0.206	0.86	195	No
640	640	256	256	0.201	0.75	254	No
640	640	288	288	0.176	0.67	322	No
640	640	320	320	0.198	0.60	397	No
640	640	352	352	0.290	0.55	481	No
640	640	384	384	0.281	0.50	572	No
640	640	416	416	0.279	0.46	671	No
640	640	448	448	0.280	0.43	778	No
640	640	480	480	0.285	0.40	893	No
640	640	512	512	0.299	0.38	1016	No
640	640	544	544	0.325	0.35	1147	Yes
640	640	576	576	0.275	0.33	1286	No
640	640	608	608	0.252	0.32	1433	No
640	640	640	640	0.281	0.30	1587	No

Legend:

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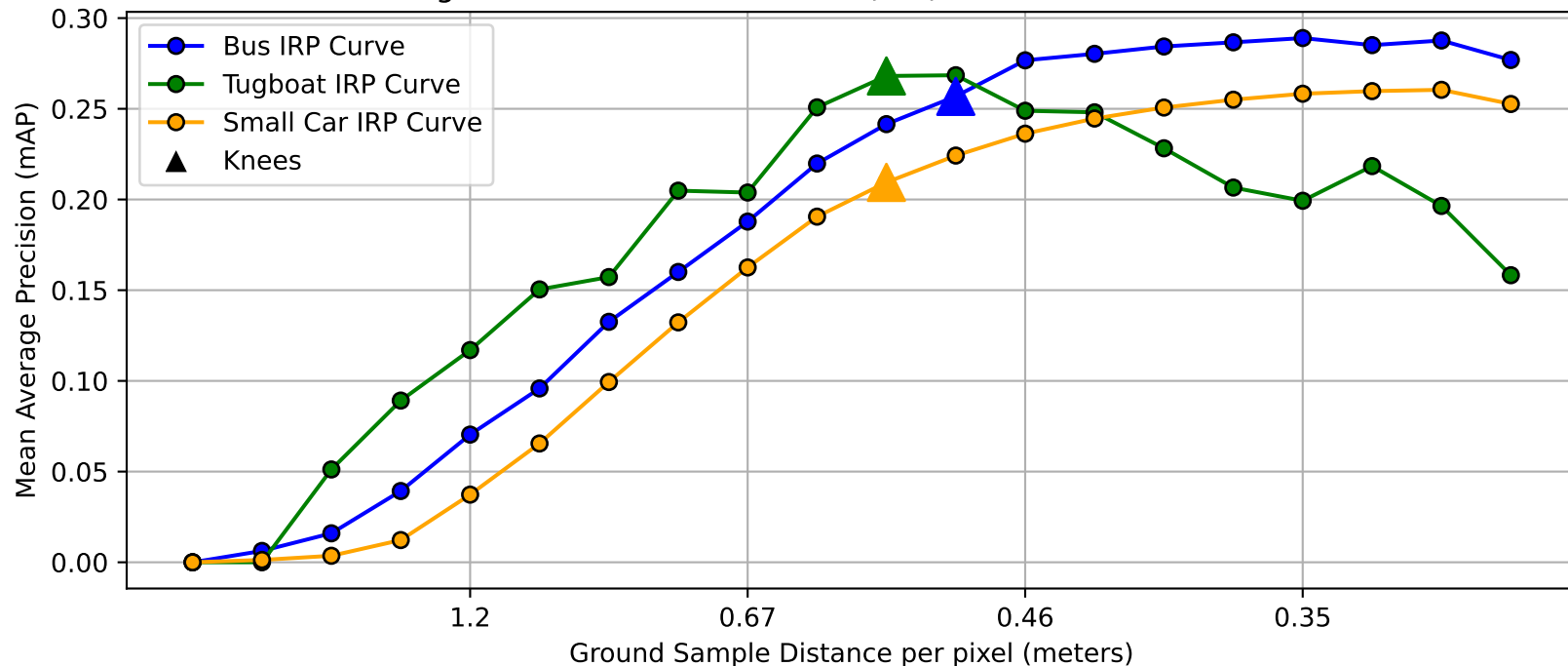
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

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Selected data for detection of Bus

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.006	3.00	6	No
640	640	96	96	0.016	2.00	12	No
640	640	128	128	0.039	1.50	21	No
640	640	160	160	0.070	1.20	32	No
640	640	192	192	0.096	1.00	47	No
640	640	224	224	0.133	0.86	63	No
640	640	256	256	0.160	0.75	82	No
640	640	288	288	0.188	0.67	104	No
640	640	320	320	0.220	0.60	128	No
640	640	352	352	0.242	0.55	155	No
640	640	384	384	0.257	0.50	185	Yes
640	640	416	416	0.277	0.46	217	No
640	640	448	448	0.280	0.43	251	No
640	640	480	480	0.284	0.40	289	No
640	640	512	512	0.287	0.38	328	No
640	640	544	544	0.289	0.35	370	No
640	640	576	576	0.285	0.33	415	No
640	640	608	608	0.288	0.32	463	No
640	640	640	640	0.277	0.30	512	No

Legend:

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GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Tugboat

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	12	No
640	640	64	64	0.000	3.00	46	No
640	640	96	96	0.051	2.00	103	No
640	640	128	128	0.089	1.50	183	No
640	640	160	160	0.117	1.20	285	No
640	640	192	192	0.150	1.00	411	No
640	640	224	224	0.157	0.86	559	No
640	640	256	256	0.205	0.75	730	No
640	640	288	288	0.204	0.67	923	No
640	640	320	320	0.251	0.60	1140	No
640	640	352	352	0.268	0.55	1379	Yes
640	640	384	384	0.269	0.50	1641	No
640	640	416	416	0.249	0.46	1926	No
640	640	448	448	0.248	0.43	2233	No
640	640	480	480	0.228	0.40	2564	No
640	640	512	512	0.207	0.38	2917	No
640	640	544	544	0.199	0.35	3293	No
640	640	576	576	0.218	0.33	3692	No
640	640	608	608	0.196	0.32	4113	No
640	640	640	640	0.158	0.30	4557	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Small Car

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	1	No
640	640	64	64	0.001	3.00	2	No
640	640	96	96	0.004	2.00	5	No
640	640	128	128	0.012	1.50	8	No
640	640	160	160	0.037	1.20	13	No
640	640	192	192	0.065	1.00	18	No
640	640	224	224	0.099	0.86	24	No
640	640	256	256	0.132	0.75	32	No
640	640	288	288	0.163	0.67	40	No
640	640	320	320	0.191	0.60	49	No
640	640	352	352	0.209	0.55	59	Yes
640	640	384	384	0.224	0.50	71	No
640	640	416	416	0.236	0.46	83	No
640	640	448	448	0.245	0.43	96	No
640	640	480	480	0.251	0.40	110	No
640	640	512	512	0.255	0.38	125	No
640	640	544	544	0.258	0.35	141	No
640	640	576	576	0.260	0.33	158	No
640	640	608	608	0.260	0.32	176	No
640	640	640	640	0.253	0.30	196	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

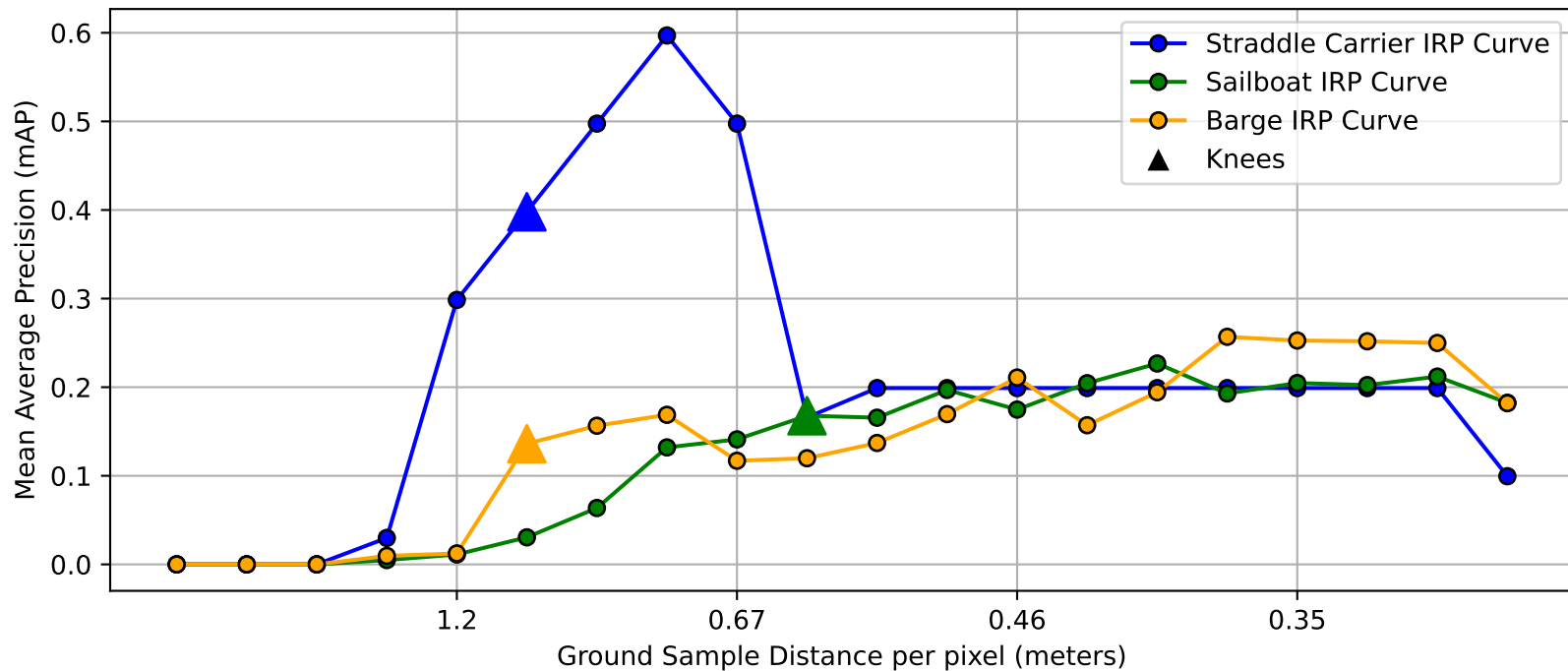
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Straddle Carrier

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	35	No
640	640	64	64	0.000	3.00	138	No
640	640	96	96	0.000	2.00	310	No
640	640	128	128	0.030	1.50	551	No
640	640	160	160	0.298	1.20	861	No
640	640	192	192	0.398	1.00	1239	Yes
640	640	224	224	0.497	0.86	1686	No
640	640	256	256	0.597	0.75	2202	No
640	640	288	288	0.497	0.67	2787	No
640	640	320	320	0.166	0.60	3441	No
640	640	352	352	0.199	0.55	4163	No
640	640	384	384	0.199	0.50	4954	No
640	640	416	416	0.199	0.46	5815	No
640	640	448	448	0.199	0.43	6743	No
640	640	480	480	0.199	0.40	7741	No
640	640	512	512	0.199	0.38	8808	No
640	640	544	544	0.199	0.35	9943	No
640	640	576	576	0.199	0.33	11147	No
640	640	608	608	0.199	0.32	12420	No
640	640	640	640	0.100	0.30	13761	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Sailboat

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.000	3.00	9	No
640	640	96	96	0.000	2.00	19	No
640	640	128	128	0.005	1.50	33	No
640	640	160	160	0.011	1.20	52	No
640	640	192	192	0.031	1.00	74	No
640	640	224	224	0.064	0.86	101	No
640	640	256	256	0.132	0.75	132	No
640	640	288	288	0.141	0.67	166	No
640	640	320	320	0.168	0.60	205	Yes
640	640	352	352	0.166	0.55	248	No
640	640	384	384	0.197	0.50	295	No
640	640	416	416	0.175	0.46	347	No
640	640	448	448	0.204	0.43	402	No
640	640	480	480	0.227	0.40	461	No
640	640	512	512	0.193	0.38	525	No
640	640	544	544	0.205	0.35	592	No
640	640	576	576	0.202	0.33	664	No
640	640	608	608	0.212	0.32	740	No
640	640	640	640	0.182	0.30	819	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Barge

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	37	No
640	640	64	64	0.000	3.00	145	No
640	640	96	96	0.000	2.00	327	No
640	640	128	128	0.010	1.50	580	No
640	640	160	160	0.012	1.20	907	No
640	640	192	192	0.136	1.00	1305	Yes
640	640	224	224	0.157	0.86	1777	No
640	640	256	256	0.169	0.75	2320	No
640	640	288	288	0.117	0.67	2937	No
640	640	320	320	0.120	0.60	3625	No
640	640	352	352	0.137	0.55	4386	No
640	640	384	384	0.170	0.50	5220	No
640	640	416	416	0.211	0.46	6126	No
640	640	448	448	0.157	0.43	7105	No
640	640	480	480	0.194	0.40	8156	No
640	640	512	512	0.257	0.38	9280	No
640	640	544	544	0.253	0.35	10476	No
640	640	576	576	0.252	0.33	11745	No
640	640	608	608	0.250	0.32	13086	No
640	640	640	640	0.182	0.30	14499	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

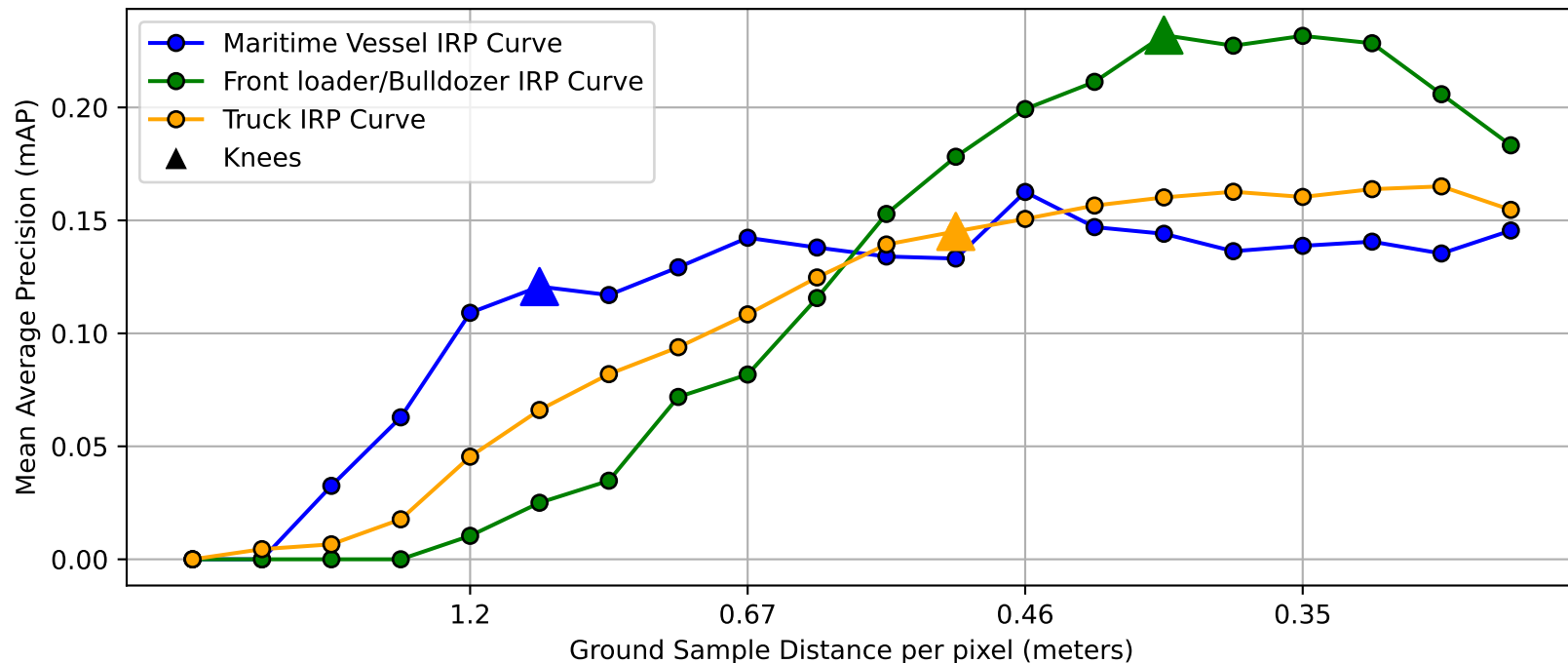
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Maritime Vessel

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	32	No
640	640	64	64	0.000	3.00	125	No
640	640	96	96	0.033	2.00	280	No
640	640	128	128	0.063	1.50	497	No
640	640	160	160	0.109	1.20	776	No
640	640	192	192	0.121	1.00	1117	Yes
640	640	224	224	0.117	0.86	1520	No
640	640	256	256	0.129	0.75	1985	No
640	640	288	288	0.142	0.67	2512	No
640	640	320	320	0.138	0.60	3101	No
640	640	352	352	0.134	0.55	3752	No
640	640	384	384	0.133	0.50	4465	No
640	640	416	416	0.163	0.46	5240	No
640	640	448	448	0.147	0.43	6077	No
640	640	480	480	0.144	0.40	6976	No
640	640	512	512	0.136	0.38	7937	No
640	640	544	544	0.139	0.35	8960	No
640	640	576	576	0.141	0.33	10045	No
640	640	608	608	0.135	0.32	11192	No
640	640	640	640	0.146	0.30	12401	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Front loader/Bulldozer

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	6	No
640	640	96	96	0.000	2.00	13	No
640	640	128	128	0.000	1.50	22	No
640	640	160	160	0.010	1.20	35	No
640	640	192	192	0.025	1.00	50	No
640	640	224	224	0.035	0.86	67	No
640	640	256	256	0.072	0.75	88	No
640	640	288	288	0.082	0.67	111	No
640	640	320	320	0.116	0.60	137	No
640	640	352	352	0.153	0.55	166	No
640	640	384	384	0.178	0.50	197	No
640	640	416	416	0.199	0.46	231	No
640	640	448	448	0.211	0.43	268	No
640	640	480	480	0.232	0.40	308	Yes
640	640	512	512	0.227	0.38	350	No
640	640	544	544	0.232	0.35	395	No
640	640	576	576	0.228	0.33	443	No
640	640	608	608	0.206	0.32	493	No
640	640	640	640	0.183	0.30	546	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Truck

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.004	3.00	6	No
640	640	96	96	0.007	2.00	12	No
640	640	128	128	0.018	1.50	21	No
640	640	160	160	0.045	1.20	33	No
640	640	192	192	0.066	1.00	48	No
640	640	224	224	0.082	0.86	65	No
640	640	256	256	0.094	0.75	84	No
640	640	288	288	0.108	0.67	107	No
640	640	320	320	0.125	0.60	131	No
640	640	352	352	0.139	0.55	159	No
640	640	384	384	0.145	0.50	189	Yes
640	640	416	416	0.151	0.46	222	No
640	640	448	448	0.157	0.43	257	No
640	640	480	480	0.160	0.40	295	No
640	640	512	512	0.163	0.38	336	No
640	640	544	544	0.160	0.35	379	No
640	640	576	576	0.164	0.33	425	No
640	640	608	608	0.165	0.32	473	No
640	640	640	640	0.155	0.30	524	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

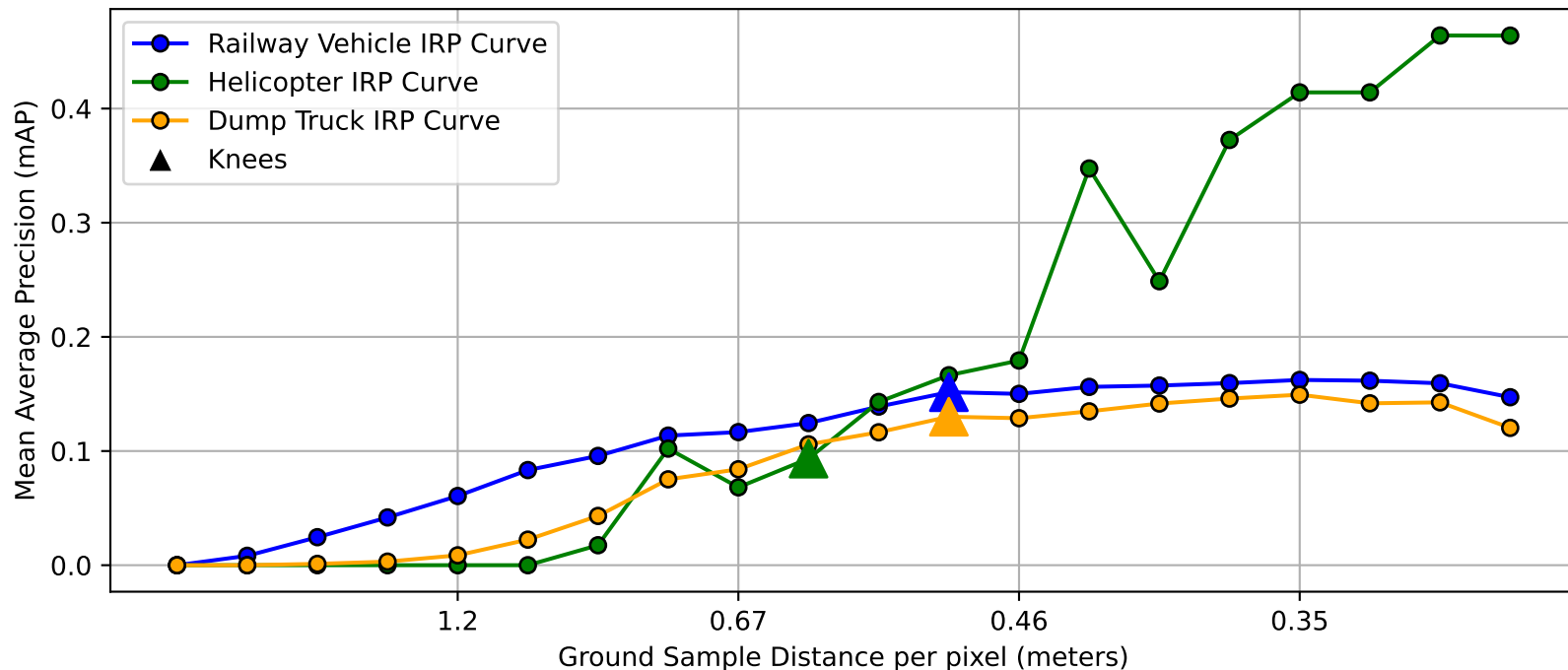
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Railway Vehicle

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	5	No
640	640	64	64	0.008	3.00	18	No
640	640	96	96	0.025	2.00	40	No
640	640	128	128	0.042	1.50	71	No
640	640	160	160	0.061	1.20	111	No
640	640	192	192	0.083	1.00	160	No
640	640	224	224	0.096	0.86	218	No
640	640	256	256	0.114	0.75	284	No
640	640	288	288	0.117	0.67	360	No
640	640	320	320	0.125	0.60	444	No
640	640	352	352	0.139	0.55	537	No
640	640	384	384	0.152	0.50	639	Yes
640	640	416	416	0.150	0.46	750	No
640	640	448	448	0.156	0.43	869	No
640	640	480	480	0.157	0.40	998	No
640	640	512	512	0.159	0.38	1135	No
640	640	544	544	0.162	0.35	1281	No
640	640	576	576	0.162	0.33	1437	No
640	640	608	608	0.159	0.32	1601	No
640	640	640	640	0.147	0.30	1773	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Helicopter

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	5	No
640	640	64	64	0.000	3.00	20	No
640	640	96	96	0.000	2.00	44	No
640	640	128	128	0.000	1.50	78	No
640	640	160	160	0.000	1.20	121	No
640	640	192	192	0.000	1.00	175	No
640	640	224	224	0.017	0.86	238	No
640	640	256	256	0.102	0.75	310	No
640	640	288	288	0.068	0.67	393	No
640	640	320	320	0.093	0.60	484	Yes
640	640	352	352	0.143	0.55	586	No
640	640	384	384	0.166	0.50	697	No
640	640	416	416	0.179	0.46	818	No
640	640	448	448	0.347	0.43	949	No
640	640	480	480	0.249	0.40	1089	No
640	640	512	512	0.372	0.38	1240	No
640	640	544	544	0.414	0.35	1399	No
640	640	576	576	0.414	0.33	1569	No
640	640	608	608	0.464	0.32	1748	No
640	640	640	640	0.464	0.30	1936	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Dump Truck

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	6	No
640	640	96	96	0.001	2.00	14	No
640	640	128	128	0.003	1.50	24	No
640	640	160	160	0.009	1.20	37	No
640	640	192	192	0.022	1.00	53	No
640	640	224	224	0.043	0.86	72	No
640	640	256	256	0.075	0.75	94	No
640	640	288	288	0.084	0.67	119	No
640	640	320	320	0.106	0.60	146	No
640	640	352	352	0.116	0.55	177	No
640	640	384	384	0.130	0.50	211	Yes
640	640	416	416	0.129	0.46	247	No
640	640	448	448	0.135	0.43	287	No
640	640	480	480	0.142	0.40	329	No
640	640	512	512	0.146	0.38	374	No
640	640	544	544	0.149	0.35	422	No
640	640	576	576	0.142	0.33	474	No
640	640	608	608	0.143	0.32	528	No
640	640	640	640	0.120	0.30	584	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

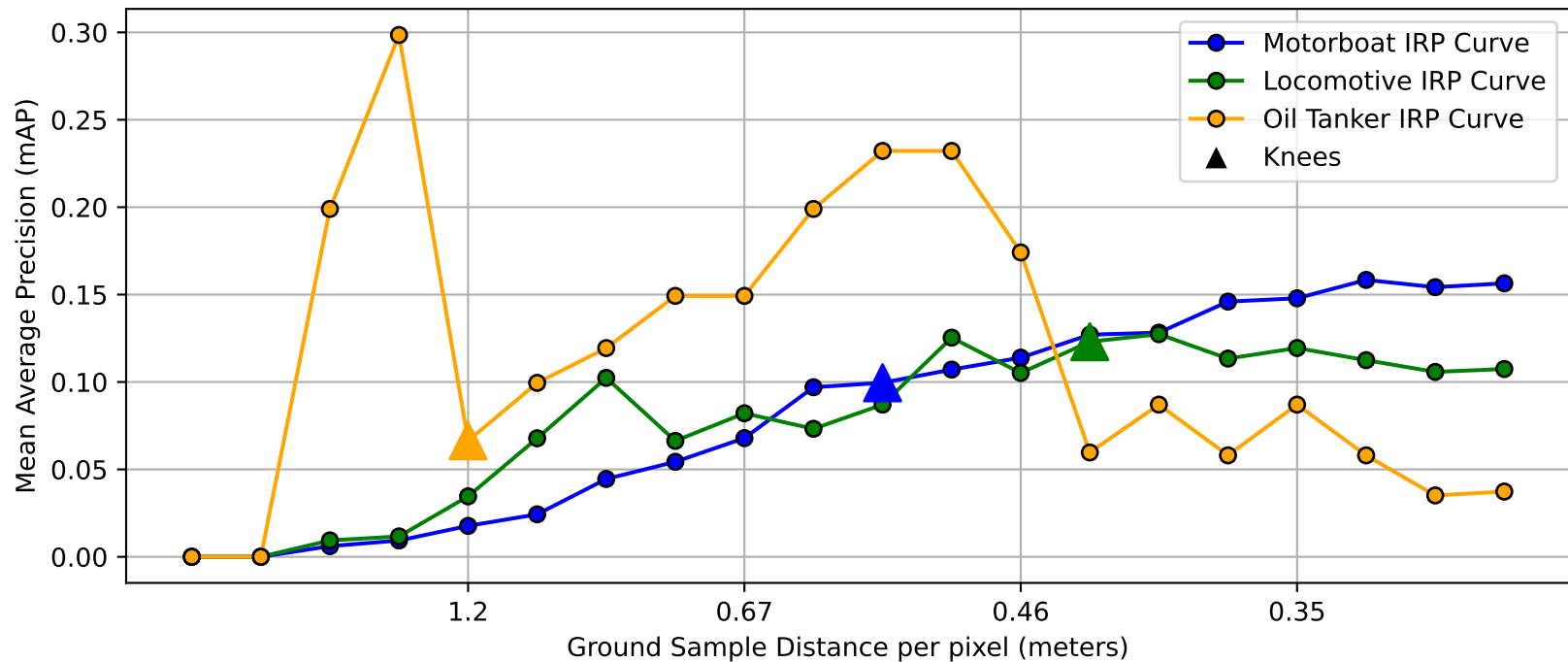
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Motorboat

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	6	No
640	640	96	96	0.006	2.00	12	No
640	640	128	128	0.009	1.50	22	No
640	640	160	160	0.018	1.20	33	No
640	640	192	192	0.024	1.00	48	No
640	640	224	224	0.045	0.86	65	No
640	640	256	256	0.054	0.75	85	No
640	640	288	288	0.068	0.67	107	No
640	640	320	320	0.097	0.60	132	No
640	640	352	352	0.100	0.55	160	Yes
640	640	384	384	0.107	0.50	190	No
640	640	416	416	0.114	0.46	223	No
640	640	448	448	0.127	0.43	258	No
640	640	480	480	0.128	0.40	296	No
640	640	512	512	0.146	0.38	337	No
640	640	544	544	0.148	0.35	381	No
640	640	576	576	0.158	0.33	427	No
640	640	608	608	0.154	0.32	475	No
640	640	640	640	0.156	0.30	526	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Locomotive

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	5	No
640	640	64	64	0.000	3.00	19	No
640	640	96	96	0.009	2.00	41	No
640	640	128	128	0.012	1.50	73	No
640	640	160	160	0.035	1.20	114	No
640	640	192	192	0.068	1.00	164	No
640	640	224	224	0.102	0.86	223	No
640	640	256	256	0.066	0.75	291	No
640	640	288	288	0.082	0.67	368	No
640	640	320	320	0.073	0.60	454	No
640	640	352	352	0.087	0.55	549	No
640	640	384	384	0.125	0.50	654	No
640	640	416	416	0.105	0.46	767	No
640	640	448	448	0.123	0.43	889	Yes
640	640	480	480	0.127	0.40	1021	No
640	640	512	512	0.113	0.38	1161	No
640	640	544	544	0.119	0.35	1311	No
640	640	576	576	0.112	0.33	1470	No
640	640	608	608	0.106	0.32	1638	No
640	640	640	640	0.107	0.30	1814	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Oil Tanker

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	106	No
640	640	64	64	0.000	3.00	424	No
640	640	96	96	0.199	2.00	952	No
640	640	128	128	0.298	1.50	1693	No
640	640	160	160	0.066	1.20	2644	Yes
640	640	192	192	0.100	1.00	3808	No
640	640	224	224	0.119	0.86	5183	No
640	640	256	256	0.149	0.75	6769	No
640	640	288	288	0.149	0.67	8567	No
640	640	320	320	0.199	0.60	10576	No
640	640	352	352	0.232	0.55	12797	No
640	640	384	384	0.232	0.50	15230	No
640	640	416	416	0.174	0.46	17874	No
640	640	448	448	0.060	0.43	20729	No
640	640	480	480	0.087	0.40	23796	No
640	640	512	512	0.058	0.38	27074	No
640	640	544	544	0.087	0.35	30564	No
640	640	576	576	0.058	0.33	34266	No
640	640	608	608	0.035	0.32	38179	No
640	640	640	640	0.037	0.30	42303	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

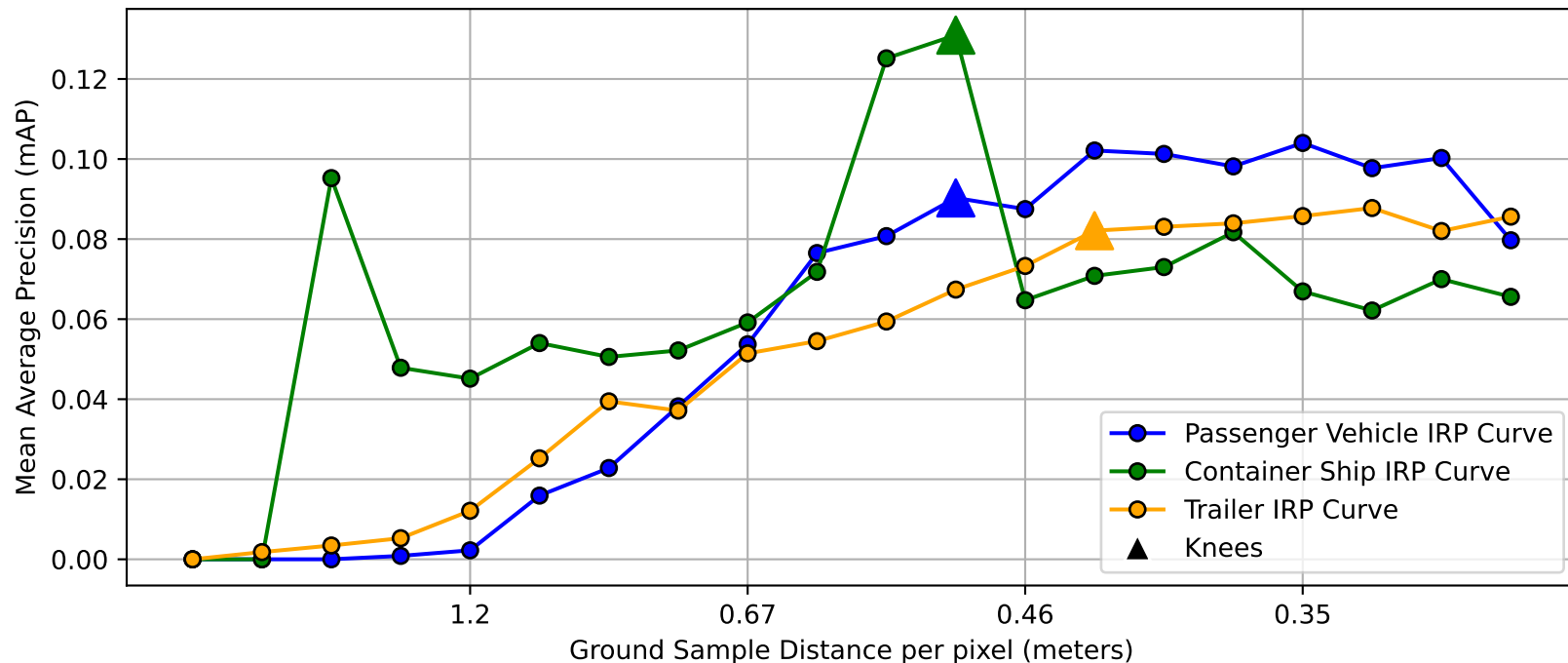
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Passenger Vehicle

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	1	No
640	640	64	64	0.000	3.00	2	No
640	640	96	96	0.000	2.00	5	No
640	640	128	128	0.001	1.50	8	No
640	640	160	160	0.002	1.20	13	No
640	640	192	192	0.016	1.00	18	No
640	640	224	224	0.023	0.86	24	No
640	640	256	256	0.038	0.75	31	No
640	640	288	288	0.054	0.67	39	No
640	640	320	320	0.077	0.60	49	No
640	640	352	352	0.081	0.55	59	No
640	640	384	384	0.090	0.50	70	Yes
640	640	416	416	0.087	0.46	82	No
640	640	448	448	0.102	0.43	95	No
640	640	480	480	0.101	0.40	109	No
640	640	512	512	0.098	0.38	123	No
640	640	544	544	0.104	0.35	139	No
640	640	576	576	0.098	0.33	156	No
640	640	608	608	0.100	0.32	174	No
640	640	640	640	0.080	0.30	193	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Container Ship

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	118	No
640	640	64	64	0.000	3.00	470	No
640	640	96	96	0.095	2.00	1057	No
640	640	128	128	0.048	1.50	1879	No
640	640	160	160	0.045	1.20	2936	No
640	640	192	192	0.054	1.00	4228	No
640	640	224	224	0.051	0.86	5755	No
640	640	256	256	0.052	0.75	7516	No
640	640	288	288	0.059	0.67	9512	No
640	640	320	320	0.072	0.60	11743	No
640	640	352	352	0.125	0.55	14210	No
640	640	384	384	0.131	0.50	16910	Yes
640	640	416	416	0.065	0.46	19846	No
640	640	448	448	0.071	0.43	23017	No
640	640	480	480	0.073	0.40	26422	No
640	640	512	512	0.082	0.38	30063	No
640	640	544	544	0.067	0.35	33938	No
640	640	576	576	0.062	0.33	38048	No
640	640	608	608	0.070	0.32	42393	No
640	640	640	640	0.066	0.30	46972	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Trailer

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.002	3.00	9	No
640	640	96	96	0.003	2.00	19	No
640	640	128	128	0.005	1.50	34	No
640	640	160	160	0.012	1.20	53	No
640	640	192	192	0.025	1.00	76	No
640	640	224	224	0.039	0.86	104	No
640	640	256	256	0.037	0.75	135	No
640	640	288	288	0.051	0.67	171	No
640	640	320	320	0.055	0.60	211	No
640	640	352	352	0.059	0.55	256	No
640	640	384	384	0.067	0.50	304	No
640	640	416	416	0.073	0.46	357	No
640	640	448	448	0.082	0.43	414	Yes
640	640	480	480	0.083	0.40	475	No
640	640	512	512	0.084	0.38	540	No
640	640	544	544	0.086	0.35	610	No
640	640	576	576	0.088	0.33	683	No
640	640	608	608	0.082	0.32	761	No
640	640	640	640	0.086	0.30	843	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

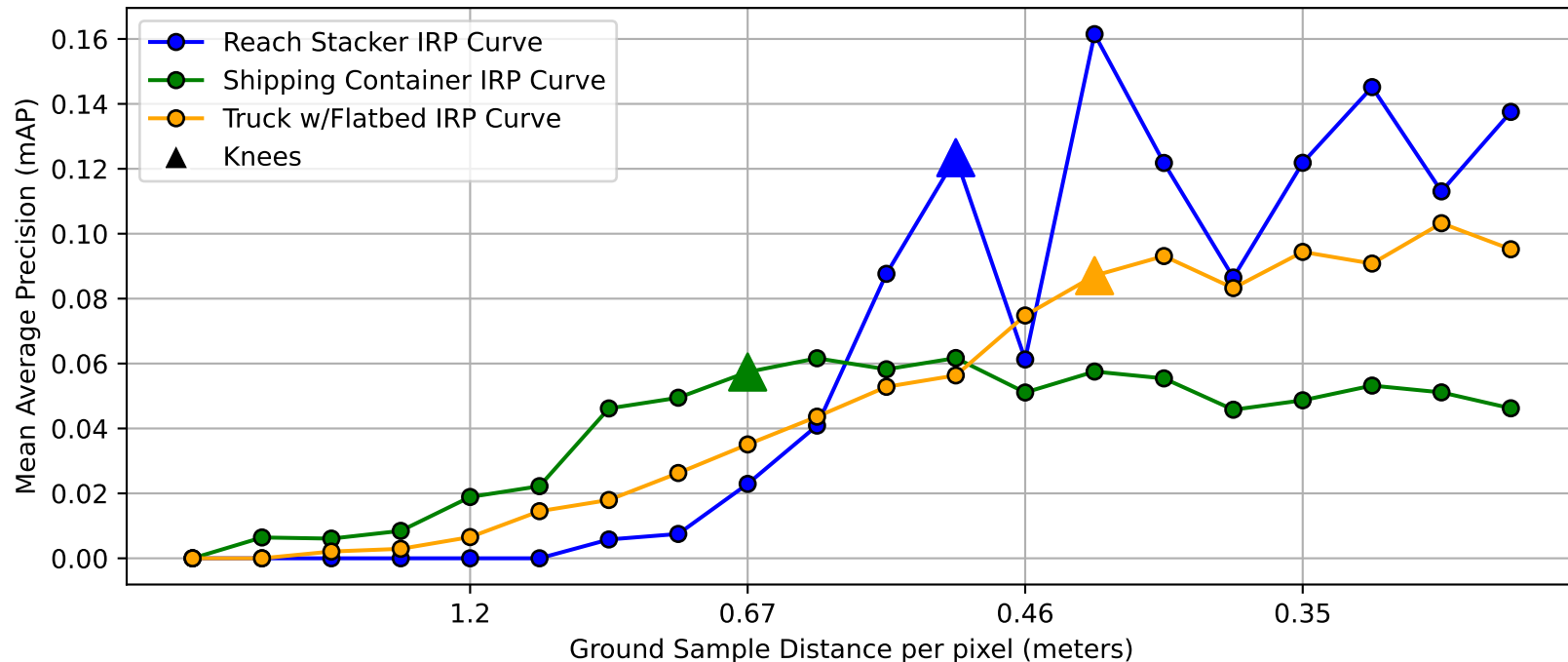
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Reach Stacker

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.000	3.00	12	No
640	640	96	96	0.000	2.00	25	No
640	640	128	128	0.000	1.50	45	No
640	640	160	160	0.000	1.20	69	No
640	640	192	192	0.000	1.00	100	No
640	640	224	224	0.006	0.86	135	No
640	640	256	256	0.008	0.75	177	No
640	640	288	288	0.023	0.67	224	No
640	640	320	320	0.041	0.60	276	No
640	640	352	352	0.088	0.55	334	No
640	640	384	384	0.123	0.50	397	Yes
640	640	416	416	0.061	0.46	466	No
640	640	448	448	0.161	0.43	540	No
640	640	480	480	0.122	0.40	620	No
640	640	512	512	0.087	0.38	706	No
640	640	544	544	0.122	0.35	797	No
640	640	576	576	0.145	0.33	893	No
640	640	608	608	0.113	0.32	995	No
640	640	640	640	0.138	0.30	1102	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Shipping Container

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.006	3.00	8	No
640	640	96	96	0.006	2.00	17	No
640	640	128	128	0.008	1.50	29	No
640	640	160	160	0.019	1.20	45	No
640	640	192	192	0.022	1.00	65	No
640	640	224	224	0.046	0.86	88	No
640	640	256	256	0.049	0.75	115	No
640	640	288	288	0.057	0.67	145	Yes
640	640	320	320	0.062	0.60	179	No
640	640	352	352	0.058	0.55	217	No
640	640	384	384	0.062	0.50	258	No
640	640	416	416	0.051	0.46	303	No
640	640	448	448	0.058	0.43	351	No
640	640	480	480	0.055	0.40	403	No
640	640	512	512	0.046	0.38	459	No
640	640	544	544	0.049	0.35	518	No
640	640	576	576	0.053	0.33	580	No
640	640	608	608	0.051	0.32	647	No
640	640	640	640	0.046	0.30	716	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Truck w/Flatbed

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.000	3.00	11	No
640	640	96	96	0.002	2.00	23	No
640	640	128	128	0.003	1.50	41	No
640	640	160	160	0.007	1.20	64	No
640	640	192	192	0.015	1.00	91	No
640	640	224	224	0.018	0.86	124	No
640	640	256	256	0.026	0.75	162	No
640	640	288	288	0.035	0.67	205	No
640	640	320	320	0.044	0.60	253	No
640	640	352	352	0.053	0.55	306	No
640	640	384	384	0.056	0.50	364	No
640	640	416	416	0.075	0.46	427	No
640	640	448	448	0.087	0.43	495	Yes
640	640	480	480	0.093	0.40	568	No
640	640	512	512	0.083	0.38	646	No
640	640	544	544	0.094	0.35	730	No
640	640	576	576	0.091	0.33	818	No
640	640	608	608	0.103	0.32	911	No
640	640	640	640	0.095	0.30	1010	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

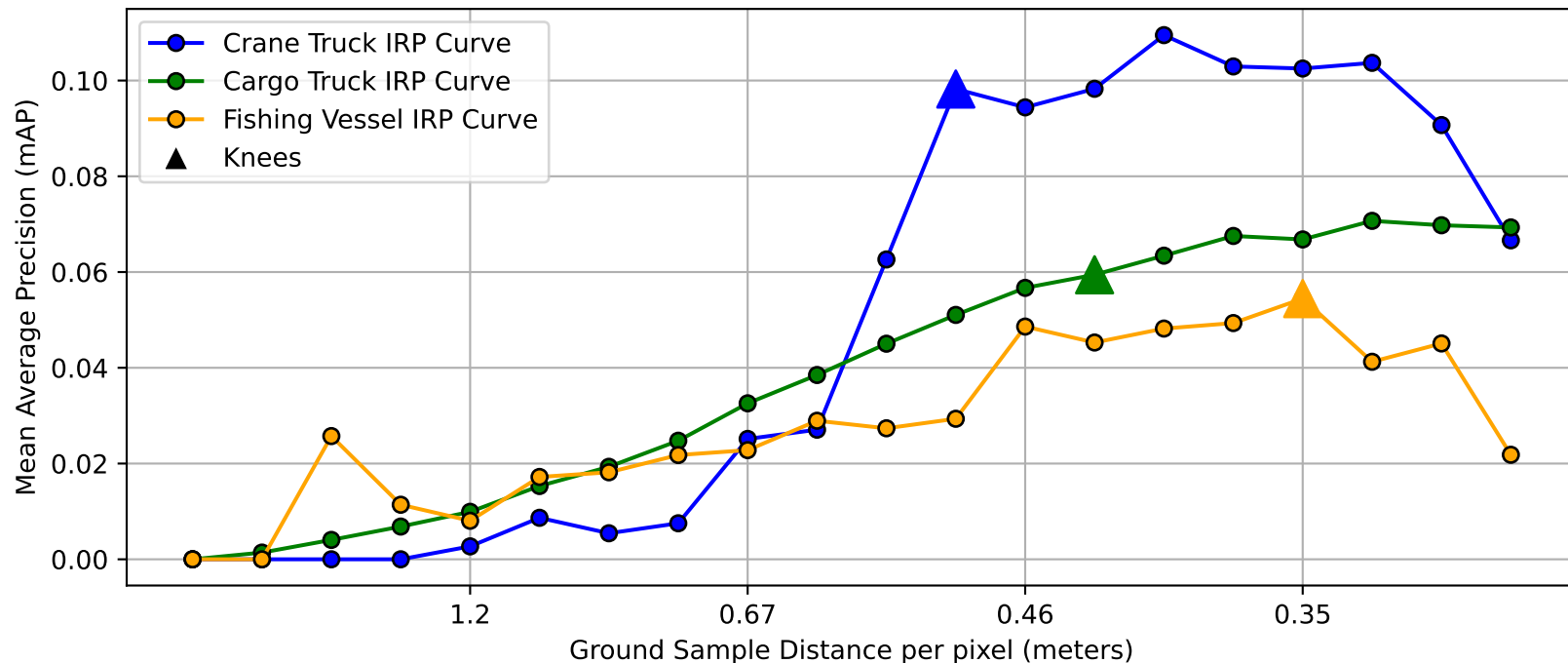
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Crane Truck

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.000	3.00	11	No
640	640	96	96	0.000	2.00	25	No
640	640	128	128	0.000	1.50	43	No
640	640	160	160	0.003	1.20	67	No
640	640	192	192	0.009	1.00	97	No
640	640	224	224	0.005	0.86	132	No
640	640	256	256	0.008	0.75	172	No
640	640	288	288	0.025	0.67	217	No
640	640	320	320	0.027	0.60	268	No
640	640	352	352	0.063	0.55	324	No
640	640	384	384	0.098	0.50	386	Yes
640	640	416	416	0.094	0.46	453	No
640	640	448	448	0.098	0.43	525	No
640	640	480	480	0.109	0.40	602	No
640	640	512	512	0.103	0.38	685	No
640	640	544	544	0.103	0.35	774	No
640	640	576	576	0.104	0.33	867	No
640	640	608	608	0.091	0.32	966	No
640	640	640	640	0.067	0.30	1070	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Cargo Truck

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.001	3.00	6	No
640	640	96	96	0.004	2.00	12	No
640	640	128	128	0.007	1.50	21	No
640	640	160	160	0.010	1.20	33	No
640	640	192	192	0.015	1.00	47	No
640	640	224	224	0.019	0.86	64	No
640	640	256	256	0.025	0.75	84	No
640	640	288	288	0.033	0.67	106	No
640	640	320	320	0.038	0.60	130	No
640	640	352	352	0.045	0.55	157	No
640	640	384	384	0.051	0.50	187	No
640	640	416	416	0.057	0.46	220	No
640	640	448	448	0.059	0.43	255	Yes
640	640	480	480	0.063	0.40	292	No
640	640	512	512	0.068	0.38	333	No
640	640	544	544	0.067	0.35	375	No
640	640	576	576	0.071	0.33	421	No
640	640	608	608	0.070	0.32	469	No
640	640	640	640	0.069	0.30	519	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Fishing Vessel

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	7	No
640	640	64	64	0.000	3.00	27	No
640	640	96	96	0.026	2.00	61	No
640	640	128	128	0.011	1.50	107	No
640	640	160	160	0.008	1.20	167	No
640	640	192	192	0.017	1.00	241	No
640	640	224	224	0.018	0.86	328	No
640	640	256	256	0.022	0.75	428	No
640	640	288	288	0.023	0.67	541	No
640	640	320	320	0.029	0.60	668	No
640	640	352	352	0.027	0.55	808	No
640	640	384	384	0.029	0.50	962	No
640	640	416	416	0.049	0.46	1129	No
640	640	448	448	0.045	0.43	1309	No
640	640	480	480	0.048	0.40	1503	No
640	640	512	512	0.049	0.38	1710	No
640	640	544	544	0.054	0.35	1930	Yes
640	640	576	576	0.041	0.33	2164	No
640	640	608	608	0.045	0.32	2411	No
640	640	640	640	0.022	0.30	2671	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

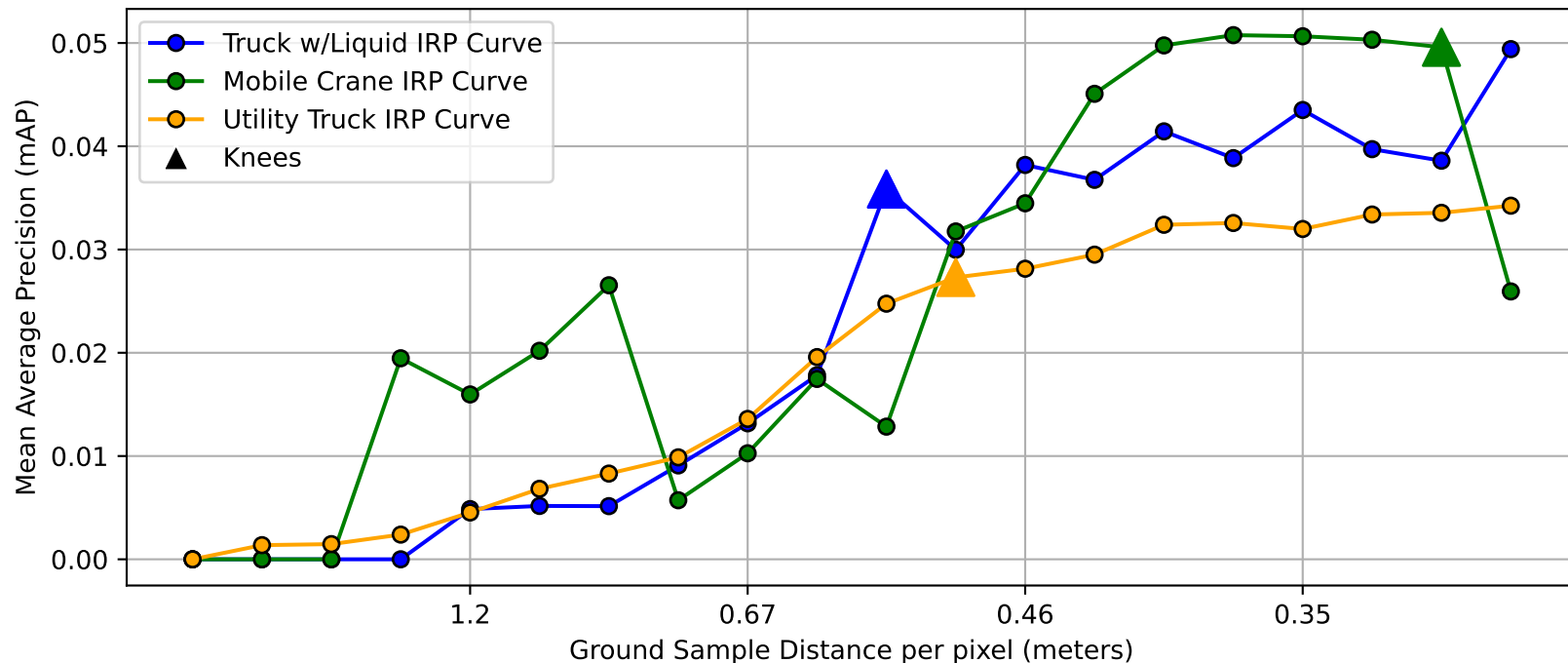
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Truck w/Liquid

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.000	3.00	10	No
640	640	96	96	0.000	2.00	23	No
640	640	128	128	0.000	1.50	40	No
640	640	160	160	0.005	1.20	62	No
640	640	192	192	0.005	1.00	89	No
640	640	224	224	0.005	0.86	121	No
640	640	256	256	0.009	0.75	158	No
640	640	288	288	0.013	0.67	200	No
640	640	320	320	0.018	0.60	247	No
640	640	352	352	0.036	0.55	299	Yes
640	640	384	384	0.030	0.50	356	No
640	640	416	416	0.038	0.46	418	No
640	640	448	448	0.037	0.43	484	No
640	640	480	480	0.041	0.40	556	No
640	640	512	512	0.039	0.38	632	No
640	640	544	544	0.044	0.35	714	No
640	640	576	576	0.040	0.33	800	No
640	640	608	608	0.039	0.32	891	No
640	640	640	640	0.049	0.30	987	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Mobile Crane

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	16	No
640	640	64	64	0.000	3.00	62	No
640	640	96	96	0.000	2.00	140	No
640	640	128	128	0.019	1.50	248	No
640	640	160	160	0.016	1.20	387	No
640	640	192	192	0.020	1.00	557	No
640	640	224	224	0.027	0.86	758	No
640	640	256	256	0.006	0.75	990	No
640	640	288	288	0.010	0.67	1253	No
640	640	320	320	0.017	0.60	1547	No
640	640	352	352	0.013	0.55	1872	No
640	640	384	384	0.032	0.50	2228	No
640	640	416	416	0.034	0.46	2615	No
640	640	448	448	0.045	0.43	3032	No
640	640	480	480	0.050	0.40	3481	No
640	640	512	512	0.051	0.38	3960	No
640	640	544	544	0.051	0.35	4471	No
640	640	576	576	0.050	0.33	5012	No
640	640	608	608	0.050	0.32	5584	Yes
640	640	640	640	0.026	0.30	6187	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Utility Truck

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	1	No
640	640	64	64	0.001	3.00	3	No
640	640	96	96	0.001	2.00	7	No
640	640	128	128	0.002	1.50	12	No
640	640	160	160	0.005	1.20	19	No
640	640	192	192	0.007	1.00	27	No
640	640	224	224	0.008	0.86	37	No
640	640	256	256	0.010	0.75	48	No
640	640	288	288	0.014	0.67	60	No
640	640	320	320	0.020	0.60	74	No
640	640	352	352	0.025	0.55	89	No
640	640	384	384	0.027	0.50	106	Yes
640	640	416	416	0.028	0.46	125	No
640	640	448	448	0.030	0.43	145	No
640	640	480	480	0.032	0.40	166	No
640	640	512	512	0.033	0.38	189	No
640	640	544	544	0.032	0.35	213	No
640	640	576	576	0.033	0.33	239	No
640	640	608	608	0.034	0.32	266	No
640	640	640	640	0.034	0.30	294	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Flat Car

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	4	No
640	640	64	64	0.000	3.00	15	No
640	640	96	96	0.000	2.00	32	No
640	640	128	128	0.000	1.50	57	No
640	640	160	160	0.009	1.20	88	No
640	640	192	192	0.007	1.00	127	No
640	640	224	224	0.010	0.86	172	No
640	640	256	256	0.017	0.75	225	No
640	640	288	288	0.019	0.67	284	No
640	640	320	320	0.020	0.60	351	No
640	640	352	352	0.024	0.55	424	No
640	640	384	384	0.042	0.50	505	No
640	640	416	416	0.041	0.46	592	No
640	640	448	448	0.055	0.43	687	No
640	640	480	480	0.055	0.40	789	No
640	640	512	512	0.086	0.38	897	No
640	640	544	544	0.068	0.35	1013	No
640	640	576	576	0.084	0.33	1135	Yes
640	640	608	608	0.054	0.32	1265	No
640	640	640	640	0.065	0.30	1401	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Cement Mixer

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	6	No
640	640	96	96	0.002	2.00	13	No
640	640	128	128	0.002	1.50	22	No
640	640	160	160	0.005	1.20	35	No
640	640	192	192	0.003	1.00	50	No
640	640	224	224	0.006	0.86	67	No
640	640	256	256	0.009	0.75	88	No
640	640	288	288	0.007	0.67	111	No
640	640	320	320	0.017	0.60	137	No
640	640	352	352	0.026	0.55	165	No
640	640	384	384	0.074	0.50	197	Yes
640	640	416	416	0.065	0.46	231	No
640	640	448	448	0.075	0.43	268	No
640	640	480	480	0.074	0.40	307	No
640	640	512	512	0.081	0.38	349	No
640	640	544	544	0.089	0.35	394	No
640	640	576	576	0.097	0.33	442	No
640	640	608	608	0.103	0.32	492	No
640	640	640	640	0.106	0.30	545	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Tower crane

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	38	No
640	640	64	64	0.000	3.00	151	No
640	640	96	96	0.000	2.00	339	No
640	640	128	128	0.000	1.50	603	No
640	640	160	160	0.000	1.20	942	No
640	640	192	192	0.000	1.00	1356	No
640	640	224	224	0.000	0.86	1845	No
640	640	256	256	0.000	0.75	2410	No
640	640	288	288	0.000	0.67	3050	No
640	640	320	320	0.020	0.60	3766	No
640	640	352	352	0.020	0.55	4556	No
640	640	384	384	0.059	0.50	5422	No
640	640	416	416	0.060	0.46	6364	No
640	640	448	448	0.079	0.43	7380	Yes
640	640	480	480	0.079	0.40	8472	No
640	640	512	512	0.080	0.38	9640	No
640	640	544	544	0.079	0.35	10882	No
640	640	576	576	0.079	0.33	12200	No
640	640	608	608	0.081	0.32	13593	No
640	640	640	640	0.046	0.30	15061	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

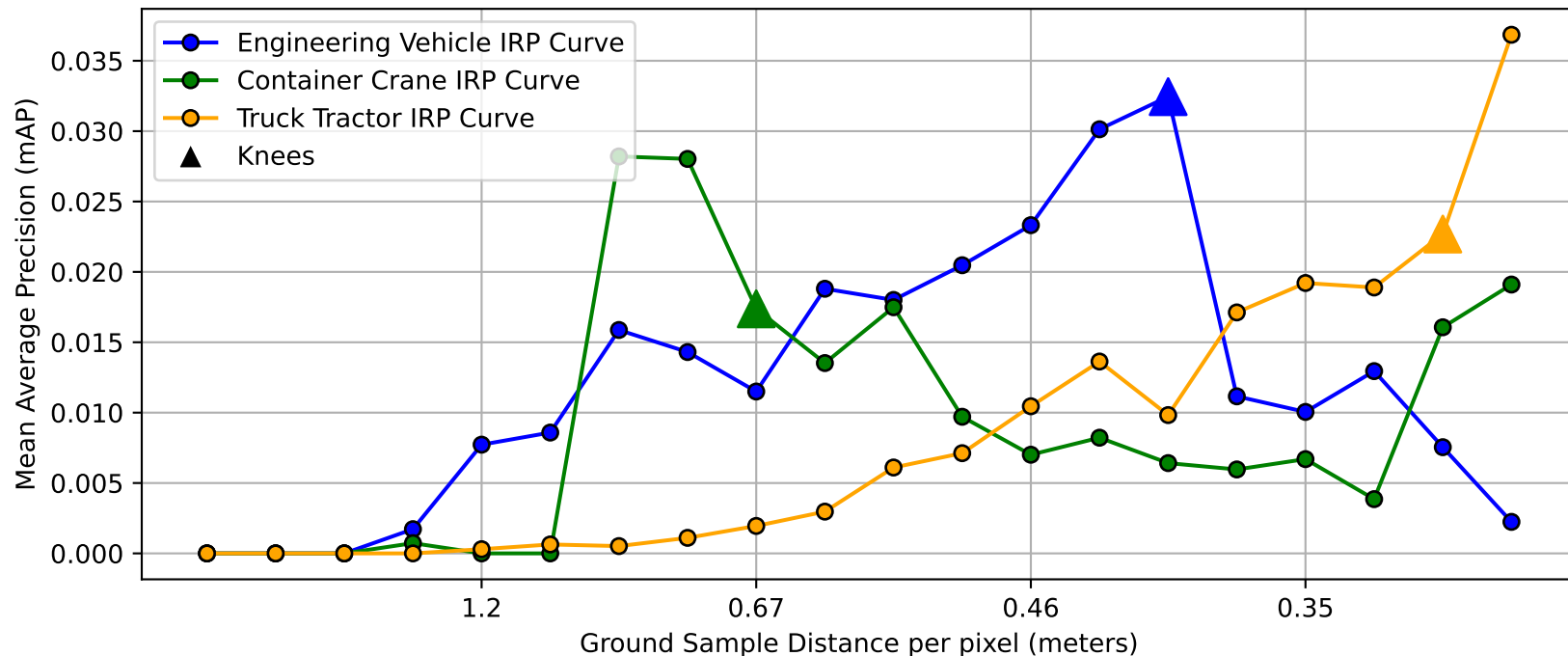
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Engineering Vehicle

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	5	No
640	640	64	64	0.000	3.00	18	No
640	640	96	96	0.000	2.00	40	No
640	640	128	128	0.002	1.50	71	No
640	640	160	160	0.008	1.20	111	No
640	640	192	192	0.009	1.00	160	No
640	640	224	224	0.016	0.86	218	No
640	640	256	256	0.014	0.75	284	No
640	640	288	288	0.012	0.67	360	No
640	640	320	320	0.019	0.60	444	No
640	640	352	352	0.018	0.55	537	No
640	640	384	384	0.020	0.50	639	No
640	640	416	416	0.023	0.46	750	No
640	640	448	448	0.030	0.43	870	No
640	640	480	480	0.032	0.40	998	Yes
640	640	512	512	0.011	0.38	1136	No
640	640	544	544	0.010	0.35	1282	No
640	640	576	576	0.013	0.33	1437	No
640	640	608	608	0.008	0.32	1602	No
640	640	640	640	0.002	0.30	1774	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Container Crane

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	55	No
640	640	64	64	0.000	3.00	220	No
640	640	96	96	0.000	2.00	495	No
640	640	128	128	0.001	1.50	880	No
640	640	160	160	0.000	1.20	1375	No
640	640	192	192	0.000	1.00	1980	No
640	640	224	224	0.028	0.86	2695	No
640	640	256	256	0.028	0.75	3519	No
640	640	288	288	0.017	0.67	4454	Yes
640	640	320	320	0.014	0.60	5499	No
640	640	352	352	0.017	0.55	6653	No
640	640	384	384	0.010	0.50	7918	No
640	640	416	416	0.007	0.46	9293	No
640	640	448	448	0.008	0.43	10777	No
640	640	480	480	0.006	0.40	12372	No
640	640	512	512	0.006	0.38	14076	No
640	640	544	544	0.007	0.35	15890	No
640	640	576	576	0.004	0.33	17815	No
640	640	608	608	0.016	0.32	19849	No
640	640	640	640	0.019	0.30	21993	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Truck Tractor

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	6	No
640	640	96	96	0.000	2.00	13	No
640	640	128	128	0.000	1.50	22	No
640	640	160	160	0.000	1.20	34	No
640	640	192	192	0.001	1.00	49	No
640	640	224	224	0.001	0.86	66	No
640	640	256	256	0.001	0.75	86	No
640	640	288	288	0.002	0.67	109	No
640	640	320	320	0.003	0.60	135	No
640	640	352	352	0.006	0.55	163	No
640	640	384	384	0.007	0.50	194	No
640	640	416	416	0.010	0.46	227	No
640	640	448	448	0.014	0.43	264	No
640	640	480	480	0.010	0.40	303	No
640	640	512	512	0.017	0.38	344	No
640	640	544	544	0.019	0.35	388	No
640	640	576	576	0.019	0.33	435	No
640	640	608	608	0.023	0.32	485	Yes
640	640	640	640	0.037	0.30	537	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

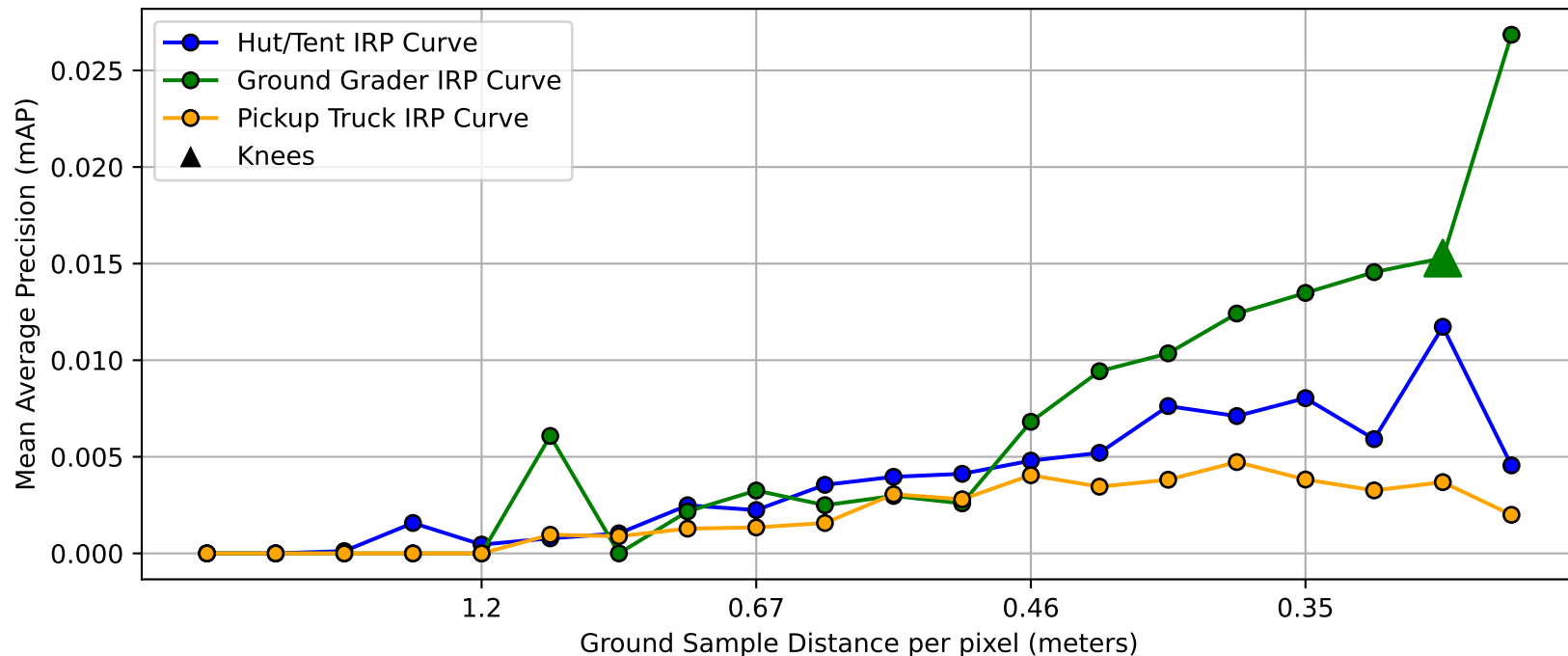
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 3 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Hut/Tent

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	3	No
640	640	64	64	0.000	3.00	12	No
640	640	96	96	0.000	2.00	26	No
640	640	128	128	0.002	1.50	47	No
640	640	160	160	0.000	1.20	73	No
640	640	192	192	0.001	1.00	104	No
640	640	224	224	0.001	0.86	142	No
640	640	256	256	0.002	0.75	185	No
640	640	288	288	0.002	0.67	234	No
640	640	320	320	0.004	0.60	289	No
640	640	352	352	0.004	0.55	350	No
640	640	384	384	0.004	0.50	416	No
640	640	416	416	0.005	0.46	488	No
640	640	448	448	0.005	0.43	566	No
640	640	480	480	0.008	0.40	650	No
640	640	512	512	0.007	0.38	740	No
640	640	544	544	0.008	0.35	835	No
640	640	576	576	0.006	0.33	936	No
640	640	608	608	0.012	0.32	1043	No
640	640	640	640	0.005	0.30	1155	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Ground Grader

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	7	No
640	640	96	96	0.000	2.00	14	No
640	640	128	128	0.000	1.50	25	No
640	640	160	160	0.000	1.20	39	No
640	640	192	192	0.006	1.00	56	No
640	640	224	224	0.000	0.86	76	No
640	640	256	256	0.002	0.75	99	No
640	640	288	288	0.003	0.67	125	No
640	640	320	320	0.002	0.60	154	No
640	640	352	352	0.003	0.55	187	No
640	640	384	384	0.003	0.50	222	No
640	640	416	416	0.007	0.46	261	No
640	640	448	448	0.009	0.43	302	No
640	640	480	480	0.010	0.40	347	No
640	640	512	512	0.012	0.38	395	No
640	640	544	544	0.013	0.35	446	No
640	640	576	576	0.015	0.33	499	No
640	640	608	608	0.015	0.32	556	Yes
640	640	640	640	0.027	0.30	616	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Pickup Truck

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	1	No
640	640	64	64	0.000	3.00	3	No
640	640	96	96	0.000	2.00	6	No
640	640	128	128	0.000	1.50	10	No
640	640	160	160	0.000	1.20	15	No
640	640	192	192	0.001	1.00	22	No
640	640	224	224	0.001	0.86	29	No
640	640	256	256	0.001	0.75	38	No
640	640	288	288	0.001	0.67	48	No
640	640	320	320	0.002	0.60	59	No
640	640	352	352	0.003	0.55	72	No
640	640	384	384	0.003	0.50	85	No
640	640	416	416	0.004	0.46	100	No
640	640	448	448	0.003	0.43	116	No
640	640	480	480	0.004	0.40	133	No
640	640	512	512	0.005	0.38	151	No
640	640	544	544	0.004	0.35	170	No
640	640	576	576	0.003	0.33	191	No
640	640	608	608	0.004	0.32	213	No
640	640	640	640	0.002	0.30	235	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

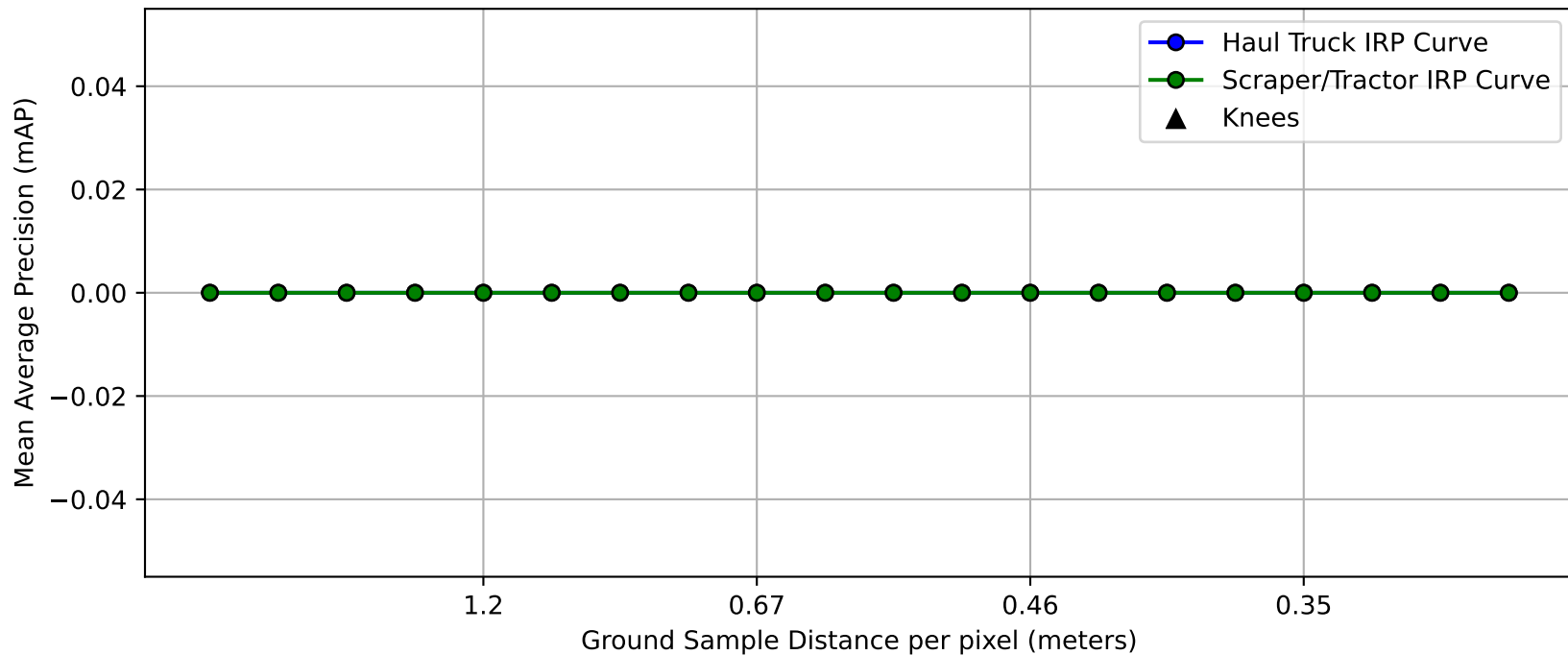
mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Image Resolution-Performance (IRP) Curves with Knee Points



IRP Curve Analysis

The plot represents 2 IRP curve(s). Each curve corresponds to a specific object detection. The x-axis shows the degraded resolution factor, by which the original resolution was reduced and then blown back up, effectively degrading the image quality. The y-axis shows the mean average aprecision (mAP) of the model's performance. The 'knee' triangle points indicate a significant inflection point where the mAP performance starts to plateau.

Selected data for detection of Haul Truck

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	6	No
640	640	64	64	0.000	3.00	22	No
640	640	96	96	0.000	2.00	48	No
640	640	128	128	0.000	1.50	85	No
640	640	160	160	0.000	1.20	132	No
640	640	192	192	0.000	1.00	190	No
640	640	224	224	0.000	0.86	258	No
640	640	256	256	0.000	0.75	337	No
640	640	288	288	0.000	0.67	426	No
640	640	320	320	0.000	0.60	526	No
640	640	352	352	0.000	0.55	636	No
640	640	384	384	0.000	0.50	757	No
640	640	416	416	0.000	0.46	889	No
640	640	448	448	0.000	0.43	1030	No
640	640	480	480	0.000	0.40	1183	No
640	640	512	512	0.000	0.38	1346	No
640	640	544	544	0.000	0.35	1519	No
640	640	576	576	0.000	0.33	1703	No
640	640	608	608	0.000	0.32	1898	No
640	640	640	640	0.000	0.30	2102	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not

Selected data for detection of Scraper/Tractor

Width	Height	Effective Width	Effective Height	mAP	GSD (meters)	Pixels on Target	Knee
640	640	32	32	0.000	6.00	2	No
640	640	64	64	0.000	3.00	7	No
640	640	96	96	0.000	2.00	15	No
640	640	128	128	0.000	1.50	27	No
640	640	160	160	0.000	1.20	42	No
640	640	192	192	0.000	1.00	60	No
640	640	224	224	0.000	0.86	81	No
640	640	256	256	0.000	0.75	106	No
640	640	288	288	0.000	0.67	134	No
640	640	320	320	0.000	0.60	165	No
640	640	352	352	0.000	0.55	200	No
640	640	384	384	0.000	0.50	238	No
640	640	416	416	0.000	0.46	279	No
640	640	448	448	0.000	0.43	323	No
640	640	480	480	0.000	0.40	371	No
640	640	512	512	0.000	0.38	422	No
640	640	544	544	0.000	0.35	477	No
640	640	576	576	0.000	0.33	534	No
640	640	608	608	0.000	0.32	595	No
640	640	640	640	0.000	0.30	659	No

Legend:

Width, Height: width and height of the image

Effective Width, Effective Height: width and height the image was degraded to
prior to resizing to the original width and height

mAP: mean average precision of the bounding boxes for the object class

GSD (meters): the size (sample) of one dimension of a pixel on the ground

Pixels on Target: the number of pixels that the object occupies

Knee: Yes if the data point is a knee, No if not