

# A list of datasets on ad-datasets

Daniel Bogdoll

**Abstract**—This is a list of datasets from the domain of autonomous driving which can be found online at <https://ad-datasets.com>. There, most datasets are enriched with additional metadata to enable filtering, search etc. This also includes additional information such as download links. If you find a dataset with missing metadata, feel free to submit a pull request.

The Semantic Scholar API was used to retrieve all necessary information for the citations. Thus, errors are possible, and some datasets do not have a proper citation.

This list was last updated on 16 June 2023.

## I. DATASETS

List of 256 datasets from the domain of autonomous driving:

- KITTI [1]
- OpenLane-V2 [2]
- UrbanLaneGraph [3]
- PeSOTIF [4]
- IMPTC [?]
- LUCOOP [?]
- DSIOD [5]
- Zenseact Open [6]
- UPCT [?]
- Indian Vehicle Dataset [?]
- V2V4Real [7]
- Surat Trajectory Data [?]
- 3DHD CityScenes [?]
- LiDAR-CS [8]
- UofTPed50 [9]
- Apollo-SouthBay [?]
- Apollo-DaoxiangLake [10]
- Fallen Person detection with Driving scenes (FPD-set) [?]
- Car Crash (CCD) [11]
- Multiple Uncertainties for Autonomous Driving (MUAD) [12]
- Pascal-WD [13]
- Vistas-NP [14]
- PP4AV [?]
- aiMotive [15]
- DANGER-vKITTI2 [?]
- DANGER-vKITTI [?]
- I see you [16]
- nuScenes [17]
- Oxford Robot Car [18]
- Waymo Open Perception [19]
- Argoverse Motion Forecasting [20]
- Argoverse 3D Tracking [21]
- Semantic KITTI [22]
- ApolloScape [23]
- BDD100k [24]
- WildDash [25]
- WildDash 2 [26]
- Lyft Level5 Prediction [27]
- Cityscapes 3D [28]
- Lyft Level5 Perception [29]
- nuImages [30]
- PandaSet [31]
- Waymo Open Motion [32]
- openDD [33]
- RoadAnomaly21 [34]
- Comma2k19 [35]
- Comma2k19 LD [36]
- KITTI-360 [37]
- Fishyscapes [38]
- LostAndFound [39]
- KAIST Multi-Spectral Day/Night [40]
- A2D2 [41]
- Caltech Pedestrian [42]
- Udacity [43]
- Ford Autonomous Vehicle [44]
- INTERACTION [45]
- MCity Data Collection [46]
- Oxford Radar Robot Car [47]
- NightOwls [48]
- H3D [49]
- 4Seasons [50]
- RadarScenes [51]
- India Driving [52]
- Synscapes [53]
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- Bosch Small Traffic Lights Dataset [55]
- PepScenes [56]
- WZ-traffic [57]
- Nighttime Driving [58]
- Cooperative Driving (CODD) [59]
- AIODrive [60]
- ROAD [61]
- ONCE [62]
- DriveU Traffic Light [63]
- Bosch TL [64]
- nuPlan [65]
- JAAD [66]
- RoadObstacle21 [67]
- BoxCars116k [68]
- Beyond PASCAL [69]
- EuroCity Persons [70]
- CADC [71]
- CARRADA [72]
- Astyx [73]
- TJ4DRadSet [74]

- PointCloudDeNoising [75]
- Talk2Car [76]
- A Parametric Top-View Representation of Complex Road Scenes [77]
- DRIV100 [78]
- Cars [79]
- CADP [80]
- NoCrash [81]
- VITRO [?]
- UDrive [?]
- D-2 City [82]
- MIT-AVT Clustered Driving Scene [83]
- SceNDD [84]
- DDAD [85]
- RELIS-3D [86]
- PolySync [?]
- DriveSeg (MANUAL) [87]
- DriveSeg (Semi-auto) [88]
- KUL Belgium Traffic Sign [89]
- GLARE [90]
- Brain4Cars [91]
- Seasonal Variation [92]
- Bay Area [93]
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- comma.ai [96]
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- DDD20: DAVIS Driving 2020 [98]
- DBNet [99]
- DIPLECS Autonomous Driving [100]
- DR(eye)VE [101]
- SemanticPOSS [102]
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- ELEKTRA [?]
- GTSRB [104]
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- Cheddar Gorge [?]
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- DDD 17 [?]
- BLVD [157]
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- EPOSH [221]
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## REFERENCES

- [1] A. Geiger, P. Lenz, C. Stiller, and R. Urtasun, "Vision meets robotics: The KITTI dataset," 2013.
- [2] H. Wang, T. Li, Y. Li, L. Chen, C. Sima, Z. Liu, Y. Wang, S. Jiang, P. Jia, B. Wang, F. Wen, H. Xu, P. Luo, J. Yan, W. Zhang, and H. Li, "OpenLane-V2: A Topology Reasoning Benchmark for Scene Understanding in Autonomous Driving," 2023.
- [3] M. Buchner, J. Zurn, I.-G. Todoran, A. Valada, and W. Burgard, "Learning and Aggregating Lane Graphs for Urban Automated Driving," 2023.
- [4] L. Peng, J. Li, W. Shao, and H. Wang, "PeSOTIF: a Challenging Visual Dataset for Perception SOTIF Problems in Long-tail Traffic Scenarios," 2022.
- [5] M. Winkelman, M. Kohlhoff, H. Tadjine, and S. Müller, "Probabilistic Metamodels for an Efficient Characterization of Complex Driving Scenarios," 2021.
- [6] M. Alibeigi, W. Ljungbergh, A. Tonderski, G. Hess, A. Lilja, C. Lindstrom, D. Motorniuk, J. Fu, J. Widahl, and C. Petersson, "Zenseact Open Dataset: A large-scale and diverse multimodal dataset for autonomous driving," 2023.
- [7] R. Xu, X. Xia, J. Li, H. Li, S. Zhang, Z. Tu, Z. Meng, H. Xiang, X. Dong, R. Song, H. Yu, B. Zhou, and J. Ma, "V2V4Real: A Real-world Large-scale Dataset for Vehicle-to-Vehicle Cooperative Perception," 2023.
- [8] J. Fang, D. Zhou, J. Zhao, C. Tang, C. Xu, and L. Zhang, "LiDAR-CS Dataset: LiDAR Point Cloud Dataset with Cross-Sensors for 3D Object Detection," 2023.
- [9] K. Burnett, S. Samavi, S. Waslander, T. Barfoot, and A. Schoellig, "aUToTrack: A Lightweight Object Detection and Tracking System for the SAE AutoDrive Challenge," 2019.
- [10] Y. Zhou, G. Wan, S. Hou, L. Yu, G. Wang, X. Rui, and S. Song, "DA4AD: End-to-end Deep Attention Aware Features Aided Visual Localization for Autonomous Driving," 2020.
- [11] U. Goenka, A. Jagetia, P. Patil, A. Singh, T. Sharma, and P. Saini, "Threat Detection In Self-Driving Vehicles Using Computer Vision," 2022.
- [12] G. Franchi, X. Yu, A. Bursuc, R. Kazmierczak, S. Dubuisson, E. Aldea, and D. Filliat, "MUAD: Multiple Uncertainties for Autonomous Driving benchmark for multiple uncertainty types and tasks," 2022.
- [13] P. Bevandic, I. Kreso, M. Oršić, and S. Segvic, "Simultaneous Semantic Segmentation and Outlier Detection in Presence of Domain Shift," 2019.
- [14] M. Grcic, P. Bevandic, and S. Segvic, "Dense open-set recognition with synthetic outliers generated by Real NVP," 2020.
- [15] T. Matuszka, I. Barton, Butykai, P. Hajas, D. Kiss, D. Kov'acs, S. Kuns'agi-M'at'e, P. Lengyel, G. Németh, L. Peto, D. Ribli, D. Szeghy, S. Vajna, and B. Varga, "aiMotive Dataset: A Multimodal Dataset for Robust Autonomous Driving with Long-Range Perception," 2022.
- [16] H. Quispe, J. Sumire, P. Condori, E. Alvarez, and H. Vera, "I see you: A Vehicle-Pedestrian Interaction Dataset from Traffic Surveillance Cameras," 2022.
- [17] H. Caesar, V. Bankiti, A. Lang, S. Vora, V. Liong, Q. Xu, A. Krishnan, Y. Pan, G. Baldan, and O. Beijbom, "nuScenes: A Multimodal Dataset for Autonomous Driving," 2019.
- [18] W. Maddern, G. Pascoe, C. Linegar, and P. Newman, "1 year, 1000 km: The Oxford RobotCar dataset," 2017.
- [19] P. Sun, H. Kretschmar, X. Dotiwalla, A. Chouard, V. Patnaik, P. Tsui, J. Guo, Y. Zhou, Y. Chai, B. Caine, V. Vasudevan, W. Han, J. Ngiam, H. Zhao, A. Timofeev, S. Ettinger, M. Krivokon, A. Gao, A. Joshi, Y. Zhang, J. Shlens, Z. Chen, and D. Anguelov, "Scalability in Perception for Autonomous Driving: Waymo Open Dataset," 2019.
- [20] M.-F. Chang, J. Lambert, P. Sangkloy, J. Singh, S. Bak, A. Hartnett, D. Wang, P. Carr, S. Lucey, D. Ramanan, and J. Hays, "Argoverse: 3D Tracking and Forecasting With Rich Maps," 2019.

- [21] —, “Argoverse: 3D Tracking and Forecasting With Rich Maps,” 2019.
- [22] J. Behley, M. Garbade, A. Milioto, J. Quenzel, S. Behnke, C. Stachniss, and J. Gall, “A Dataset for Semantic Segmentation of Point Cloud Sequences,” 2019.
- [23] P. Wang, X. Huang, X. Cheng, D. Zhou, Q. Geng, and R. Yang, “The ApolloScape Open Dataset for Autonomous Driving and Its Application,” 2018.
- [24] F. Yu, H. Chen, X. Wang, W. Xian, Y. Chen, F. Liu, V. Madhavan, and T. Darrell, “BDD100K: A Diverse Driving Dataset for Heterogeneous Multitask Learning,” 2018.
- [25] O. Zendel, K. Honauer, M. Murschitz, D. Steininger, and G. Domínguez, “WildDash - Creating Hazard-Aware Benchmarks,” 2018.
- [26] O. Zendel, M. Schörghuber, B. Rainer, M. Murschitz, and C. Beleznaï, “Unifying Panoptic Segmentation for Autonomous Driving,” 2022.
- [27] J. Houston, G. Zuidhof, L. Bergamini, Y. Ye, A. Jain, S. Omari, V. Iglovikov, and P. Ondruska, “One Thousand and One Hours: Self-driving Motion Prediction Dataset,” 2020.
- [28] N. Gahlert, N. Jourdan, M. Cordts, U. Franke, and J. Denzler, “Cityscapes 3D: Dataset and Benchmark for 9 DoF Vehicle Detection,” 2020.
- [29] J. Houston, G. Zuidhof, L. Bergamini, Y. Ye, A. Jain, S. Omari, V. Iglovikov, and P. Ondruska, “One Thousand and One Hours: Self-driving Motion Prediction Dataset,” 2020.
- [30] H. Caesar, V. Bankiti, A. Lang, S. Vora, V. Liong, Q. Xu, A. Krishnan, Y. Pan, G. Baldan, and O. Beijbom, “nuScenes: A Multimodal Dataset for Autonomous Driving,” 2019.
- [31] P. Xiao, Z. Shao, S. Hao, Z. Zhang, X. Chai, J. Jiao, Z. Li, J. Wu, K. Sun, K. Jiang, Y. Wang, and D. Yang, “PandaSet: Advanced Sensor Suite Dataset for Autonomous Driving,” 2021.
- [32] S. Ettinger, S. Cheng, B. Caine, C. Liu, H. Zhao, S. Pradhan, Y. Chai, B. Sapp, C. Qi, Y. Zhou, Z. Yang, A. Chouard, P. Sun, J. Ngiam, V. Vasudevan, A. McCauley, J. Shlens, and D. Anguelov, “Large Scale Interactive Motion Forecasting for Autonomous Driving : The Waymo Open Motion Dataset,” 2021.
- [33] A. Breuer, J.-A. Termöhlen, S. Homoceanu, and T. Fingscheidt, “openDD: A Large-Scale Roundabout Drone Dataset,” 2020.
- [34] R. Chan, K. Lis, S. Uhlemeyer, H. Blum, S. Honari, R. Siegwart, M. Salzmann, P. Fua, and M. Rottmann, “SegmentMelfYouCan: A Benchmark for Anomaly Segmentation,” 2021.
- [35] H. Schafer, E. Santana, A. Haden, and R. Biasini, “A Commute in Data: The comma2k19 Dataset,” 2018.
- [36] T. Sato and Q. Chen, “Towards Driving-Oriented Metric for Lane Detection Models,” 2022.
- [37] J. Xie, M. Kiefel, M.-T. Sun, and A. Geiger, “Semantic Instance Annotation of Street Scenes by 3D to 2D Label Transfer,” 2015.
- [38] H. Blum, P.-E. Sarlin, J. Nieto, R. Siegwart, and C. Cadena, “The Fishyscapes Benchmark: Measuring Blind Spots in Semantic Segmentation,” 2019.
- [39] P. Pinggera, S. Ramos, S. Gehrig, U. Franke, C. Rother, and R. Mester, “Lost and Found: detecting small road hazards for self-driving vehicles,” 2016.
- [40] Y. Choi, N. Kim, S. Hwang, K. Park, J. Yoon, K. An, and I. Kweon, “KAIST Multi-Spectral Day/Night Data Set for Autonomous and Assisted Driving,” 2018.
- [41] J. Geyer, Y. Kassahun, M. Mahmudi, X. Ricou, R. Durgesh, A. Chung, L. Hauswald, V. Pham, M. Mühlegg, S. Dorn, T. Fernandez, M. Jänicke, S. Mirashi, C. Savani, M. Sturm, O. Vorobiov, M. Oelker, S. Garreis, and P. Schuberth, “A2D2: Audi Autonomous Driving Dataset,” 2020.
- [42] P. Dollár, C. Wojek, B. Schiele, and P. Perona, “Pedestrian detection: A benchmark,” 2009.
- [43] “.”
- [44] S. Agarwal, A. Vora, G. Pandey, W. Williams, H. Kourous, and J. McBride, “Ford Multi-AV Seasonal Dataset,” 2020.
- [45] W. Zhan, L. Sun, D. Wang, H. Shi, A. Clausse, M. Naumann, J. Kümmerle, H. Königshof, C. Stiller, A. Fortelle, and M. Tomizuka, “INTERACTION Dataset: An INTERnational, Adversarial and Cooperative moTION Dataset in Interactive Driving Scenarios with Semantic Maps,” 2019.
- [46] Y. Dong, Y. Zhong, W. Yu, M. Zhu, P. Lu, Y. Fang, J. Hong, and H. Peng, “Mcity Data Collection for Automated Vehicles Study,” 2019.
- [47] D. Barnes, M. Gadd, P. Murcutt, P. Newman, and I. Posner, “The Oxford Radar RobotCar Dataset: A Radar Extension to the Oxford RobotCar Dataset,” 2019.
- [48] L. Neumann, M. Karg, S. Zhang, C. Scharfenberger, E. Piegert, S. Mistr, O. Prokofyeva, R. Thiel, A. Vedaldi, A. Zisserman, and B. Schiele, “NightOwls: A Pedestrians at Night Dataset,” 2018.
- [49] A. Patil, S. Malla, H. Gang, and Y.-T. Chen, “The H3D Dataset for Full-Surround 3D Multi-Object Detection and Tracking in Crowded Urban Scenes,” 2019.
- [50] P. Wenzel, R. Wang, N. Yang, Q. Cheng, Q. Khan, L. Stumberg, N. Zeller, and D. Cremers, “4Seasons: A Cross-Season Dataset for Multi-Weather SLAM in Autonomous Driving,” 2020.
- [51] O. Schumann, M. Hahn, N. Scheiner, F. Weishaupt, J. Tilly, J. Dickmann, and C. Wöhler, “RadarScenes: A Real-World Radar Point Cloud Data Set for Automotive Applications,” 2021.
- [52] G. Varma, A. Subramanian, A. Nambodiri, M. Chandraker, and C. Jawahar, “IDD: A Dataset for Exploring Problems of Autonomous Navigation in Unconstrained Environments,” 2018.
- [53] M. Wrenninge and J. Unger, “Synscapes: A Photorealistic Synthetic Dataset for Street Scene Parsing,” 2018.
- [54] M. Sheeny, E. Pellegrin, S. Mukherjee, A. Ahrabian, S. Wang, and A. Wallace, “RADIATE: A Radar Dataset for Automotive Perception,” 2020.
- [55] K. Behrendt, L. Novak, and R. Botros, “A deep learning approach to traffic lights: Detection, tracking, and classification,” 2017.
- [56] A. Rasouli, T. Yau, P. Lakner, S. Malekmohammadi, M. Rohani, and J. Luo, “PePScenes: A Novel Dataset and Baseline for Pedestrian Action Prediction in 3D,” 2020.
- [57] F. Wu, S. Yan, J. Smith, and B. Zhang, “Deep multiple classifier fusion for traffic scene recognition,” 2019.
- [58] D. Dai and L. Gool, “Dark Model Adaptation: Semantic Image Segmentation from Daytime to Nighttime,” 2018.
- [59] E. Arnold, S. Mozaffari, and M. Dianati, “Fast and Robust Registration of Partially Overlapping Point Clouds,” 2021.
- [60] “.”
- [61] G. Singh, S. Akrigg, M. Maio, V. Fontana, R. Alitappeh, S. Saha, K. Jeddisaravi, F. Yousefi, J. Culley, T. Nicholson, J. Omokeowa, S. Khan, S. Grazioso, A. Bradley, G. Gironimo, and F. Cuzzolin, “ROAD: The Road Event Awareness Dataset for Autonomous Driving,” 2021.
- [62] J. Mao, M. Niu, C. Jiang, H. Liang, X. Liang, Y. Li, C. Ye, W. Zhang, Z. Li, J. Yu, H. Xu, and C. Xu, “One Million Scenes for Autonomous Driving: ONCE Dataset,” 2021.
- [63] A. Fregin, J. Müller, U. Krebel, and K. Dietmayer, “The DriveU Traffic Light Dataset: Introduction and Comparison with Existing Datasets,” 2018.
- [64] K. Behrendt, L. Novak, and R. Botros, “A deep learning approach to traffic lights: Detection, tracking, and classification,” 2017.
- [65] H. Caesar, J. Kabzan, K. Tan, W. Fong, E. Wolff, A. Lang, L. Fletcher, O. Beijbom, and S. Omari, “nuPlan: A closed-loop ML-based planning benchmark for autonomous vehicles,” 2021.
- [66] A. Rasouli, I. Kotseruba, and J. Tsotsos, “Are They Going to Cross? A Benchmark Dataset and Baseline for Pedestrian Crosswalk Behavior,” 2017.
- [67] R. Chan, K. Lis, S. Uhlemeyer, H. Blum, S. Honari, R. Siegwart, M. Salzmann, P. Fua, and M. Rottmann, “SegmentMelfYouCan: A Benchmark for Anomaly Segmentation,” 2021.
- [68] J. Sochor, J. Špaňhel, and A. Herout, “BoxCars: Improving Fine-Grained Recognition of Vehicles Using 3-D Bounding Boxes in Traffic Surveillance,” 2017.
- [69] Y. Xiang, R. Mottaghi, and S. Savarese, “Beyond PASCAL: A benchmark for 3D object detection in the wild,” 2014.
- [70] M. Braun, S. Krebs, F. Flohr, and D. Gavrilu, “The EuroCity Persons Dataset: A Novel Benchmark for Object Detection,” 2018.
- [71] M. Pitropov, D. Garcia, J. Rebello, M. Smart, C. Wang, K. Czarnecki, and S. Waslander, “Canadian Adverse Driving Conditions dataset,” 2020.
- [72] A. Ouaknine, A. Newson, J. Rebut, F. Tupin, and P. Pérez, “CARRADA Dataset: Camera and Automotive Radar with Range- Angle- Doppler Annotations,” 2020.
- [73] “.”
- [74] L. Zheng, Z. Ma, X. Zhu, B. Tan, S. Li, K. Long, W. Sun, S. Chen, L. Zhang, M. Wan, L. Huang, and J. Bai, “TJ4DRadSet: A 4D Radar Dataset for Autonomous Driving,” 2022.

- [75] R. Heinzler, F. Piewak, P. Schindler, and W. Stork, "CNN-Based Lidar Point Cloud De-Noising in Adverse Weather," 2019.
- [76] T. Deruyterre, S. Vandenhende, D. Grujicic, L. Gool, and M.-F. Moens, "Talk2Car: Taking Control of Your Self-Driving Car," 2019.
- [77] Z. Wang, B. Liu, S. Schuster, and M. Chandraker, "A Parametric Top-View Representation of Complex Road Scenes," 2018.
- [78] H. Sakashita, C. Flothow, N. Takemura, and Y. Sugano, "DRIV100: In-The-Wild Multi-Domain Dataset and Evaluation for Real-World Domain Adaptation of Semantic Segmentation," 2021.
- [79] J. Krause, M. Stark, J. Deng, and L. Fei-Fei, "3D Object Representations for Fine-Grained Categorization," 2013.
- [80] A. Shah, J.-B. Lamare, T. Nguyen-Anh, and A. Hauptmann, "CADP: A Novel Dataset for CCTV Traffic Camera based Accident Analysis," 2018.
- [81] F. Codevilla, E. Santana, A. López, and A. Gaidon, "Exploring the Limitations of Behavior Cloning for Autonomous Driving," 2019.
- [82] Z. Che, M. Li, T. Li, B. Jiang, X. Shi, X. Zhang, Y. Lu, G. Wu, Y. Liu, and J. Ye, "D2-City: A Large-Scale Dashcam Video Dataset of Diverse Traffic Scenarios," 2019.
- [83] L. Ding, M. Glazer, M. Wang, B. Mehler, B. Reimer, and A. Fridman, "MIT-AVT Clustered Driving Scene Dataset: Evaluating Perception Systems in Real-World Naturalistic Driving Scenarios," 2020.
- [84] A. Prabu, N. Ranjan, L. Li, R. Tian, S. Chien, Y. Chen, and R. Shernoy, "ScenDD: A Scenario-based Naturalistic Driving Dataset," 2022.
- [85] V. Guizilini, R. Ambrus, S. Pillai, and A. Gaidon, "3D Packing for Self-Supervised Monocular Depth Estimation," 2019.
- [86] P. Jiang, P. Osteen, M. Wigness, and S. Saripalli, "RELLIS-3D Dataset: Data, Benchmarks and Analysis," 2020.
- [87] L. Ding, J. Terwilliger, R. Shernoy, B. Reimer, and A. Fridman, "Value of Temporal Dynamics Information in Driving Scene Segmentation," 2019.
- [88] —, "Value of Temporal Dynamics Information in Driving Scene Segmentation," 2019.
- [89] ","
- [90] N. Gray, M. Moraes, J. Bian, A. Tian, A. Wang, H. Xiong, and Z. Guo, "GLARE: A Dataset for Traffic Sign Detection in Sun Glare," 2022.
- [91] A. Jain, H. Koppula, B. Raghavan, and A. Saxena, "Know Before You Do: Anticipating Maneuvers via Learning Temporal Driving Models," 2015.
- [92] A. Bansal, H. Badino, and D. Huber, "Understanding how camera configuration and environmental conditions affect appearance-based localization," 2014.
- [93] —, "Understanding how camera configuration and environmental conditions affect appearance-based localization," 2014.
- [94] —, "Understanding how camera configuration and environmental conditions affect appearance-based localization," 2014.
- [95] ","
- [96] E. Santana and G. Hotz, "Learning a Driving Simulator," 2016.
- [97] X. Pan, J. Shi, P. Luo, X. Wang, and X. Tang, "Spatial As Deep: Spatial CNN for Traffic Scene Understanding," 2017.
- [98] Y. Hu, J. Binas, D. Neil, S.-C. Liu, and T. Delbrück, "DDD20 End-to-End Event Camera Driving Dataset: Fusing Frames and Events with Deep Learning for Improved Steering Prediction," 2020.
- [99] Y. Chen, J. Wang, J. Li, C. Lu, Z. Luo, H. Xue, and C. Wang, "LiDAR-Video Driving Dataset: Learning Driving Policies Effectively," 2018.
- [100] N. Pugeault and R. Bowden, "How Much of Driving Is Preattentive?" 2015.
- [101] A. Palazzi, D. Abati, S. Calderara, F. Solera, and R. Cucchiara, "Predicting the Driver's Focus of Attention: The DR(eye)VE Project," 2017.
- [102] Y. Pan, B. Gao, J. Mei, S. Geng, C. Li, and H. Zhao, "SemanticPOSS: A Point Cloud Dataset with Large Quantity of Dynamic Instances," 2020.
- [103] P. Jiang and S. Saripalli, "LiDARNet: A Boundary-Aware Domain Adaptation Model for Lidar Point Cloud Semantic Segmentation," 2020.
- [104] J. Stallkamp, M. Schlipsing, J. Salmen, and C. Igel, "The German Traffic Sign Recognition Benchmark: A multi-class classification competition," 2011.
- [105] S. Houben, J. Stallkamp, J. Salmen, M. Schlipsing, and C. Igel, "Detection of traffic signs in real-world images: The German traffic sign detection benchmark," 2013.
- [106] S. Meister, B. Jähne, and D. Kondermann, "Outdoor stereo camera system for the generation of real-world benchmark data sets," 2012.
- [107] D. Kondermann, R. Nair, K. Honauer, K. Krispin, J. Andrulis, A. Brock, B. Güssefeld, M. Rahimimoghaddam, S. Hofmann, C. Brenner, and B. Jähne, "The HCI Benchmark Suite: Stereo and Flow Ground Truth with Uncertainties for Urban Autonomous Driving," 2016.
- [108] S. Busch, C. Koetsier, J. Axmann, and C. Brenner, "LUMPI: The Leibniz University Multi-Perspective Intersection Dataset," 2022.
- [109] J. Breitenstein and T. Fingscheidt, "Amodal Cityscapes: A New Dataset, its Generation, and an Amodal Semantic Segmentation Challenge Baseline," 2022.
- [110] A. Møgelmoose, M. Trivedi, and T. Moeslund, "Vision-Based Traffic Sign Detection and Analysis for Intelligent Driver Assistance Systems: Perspectives and Survey," 2012.
- [111] M. Jensen, M. Philipsen, A. Møgelmoose, T. Moeslund, and M. Trivedi, "Vision for Looking at Traffic Lights: Issues, Survey, and Perspectives," 2016.
- [112] J. Blanco-Claraco, F. Moreno, and J. González, "The Málaga urban dataset: High-rate stereo and LiDAR in a realistic urban scenario," 2014.
- [113] N. Gosala and A. Valada, "Bird's-Eye-View Panoptic Segmentation Using Monocular Frontal View Images," 2021.
- [114] —, "Bird's-Eye-View Panoptic Segmentation Using Monocular Frontal View Images," 2021.
- [115] M. Tancik, V. Casser, X. Yan, S. Pradhan, B. Mildenhall, P. Srinivasan, J. Barron, and H. Kretschmar, "Block-NeRF: Scalable Large Scene Neural View Synthesis," 2022.
- [116] G. Neuhold, T. Ollmann, S. Bulò, and P. Kontschieder, "The Mapillary Vistas Dataset for Semantic Understanding of Street Scenes," 2017.
- [117] C. Ertl, J. Mislaj, T. Ollmann, L. Porzi, G. Neuhold, and Y. Kuang, "The Mapillary Traffic Sign Dataset for Detection and Classification on a Global Scale," 2019.
- [118] Z. Zhu, D. Liang, S.-H. Zhang, X. Huang, B. Li, and S. Hu, "Traffic-Sign Detection and Classification in the Wild," 2016.
- [119] ","
- [120] H. Maeda, Y. Sekimoto, T. Seto, T. Kashiwayama, and H. Omata, "Road Damage Detection Using Deep Neural Networks with Images Captured Through a Smartphone," 2018.
- [121] ","
- [122] S. Richter, V. Vineet, S. Roth, and V. Koltun, "Playing for Data: Ground Truth from Computer Games," 2016.
- [123] D. Pfeiffer, S. Gehrig, and N. Schneider, "Exploiting the Power of Stereo Confidences," 2013.
- [124] K. Behrendt, "Boxy Vehicle Detection in Large Images," 2019.
- [125] A. Kloukinitis, A. Papandreou, C. Anagnostopoulos, A. Lalos, P. Kapsalas, D. Van, and K. Moustakas, "CarlaScenes: A synthetic dataset for odometry in autonomous driving," 2022.
- [126] D.-H. Paek, S.-H. Kong, and K. Wijaya, "K-Lane: Lidar Lane Dataset and Benchmark for Urban Roads and Highways," 2021.
- [127] C. Diaz-Ruiz, Y. Xia, Y. You, J. Nino, J. Chen, J. Monica, X. Chen, K. Luo, Y. Wang, M. Emond, W.-L. Chao, B. Hariharan, K. Weinberger, and M. Campbell, "Ithaca365: Dataset and Driving Perception under Repeated and Challenging Weather Conditions," 2022.
- [128] C. Caraffi, T. Vojir, J. Trefny, J. Sochman, and J. Matas, "A system for real-time detection and tracking of vehicles from a single car-mounted camera," 2012.
- [129] O. Unal, D. Dai, and L. Gool, "Scribble-Supervised LiDAR Semantic Segmentation," 2022.
- [130] E. Romera, L. Bergasa, and R. Arroyo, "Need data for driver behaviour analysis? Presenting the public UAH-DriveSet," 2016.
- [131] K. Behrendt and R. Soussan, "Unsupervised Labeled Lane Markers Using Maps," 2019.
- [132] D. Hendrycks, S. Basart, M. Mazeika, M. Mostajabi, J. Steinhardt, and D. Song, "Scaling Out-of-Distribution Detection for Real-World Settings," 2022.
- [133] Q.-H. Pham, P. Sevestre, R. Pahwa, H. Zhan, C. Pang, Y. Chen, A. Mustafa, V. Chandrasekhar, and J. Lin, "A\*3D Dataset: Towards Autonomous Driving in Challenging Environments," 2019.
- [134] G. Brostow, J. Fauqueur, and R. Cipolla, "Semantic object classes in video: A high-definition ground truth database," 2009.
- [135] S. Lee, J. Kim, J. Yoon, S. Shin, O. Bailo, N. Kim, T. Lee, H. Hong, S.-H. Han, and I. Kweon, "VPGNet: Vanishing Point Guided Network for Lane and Road Marking Detection and Recognition," 2017.
- [136] W. Tan, N. Qin, L. Ma, Y. Li, J. Du, G. Cai, K. Yang, and J. Li, "Toronto-3D: A Large-scale Mobile LiDAR Dataset for Semantic Segmentation of Urban Roadways," 2020.

- [137] S. Wang, M. Bai, G. Mátyus, H. Chu, W. Luo, B. Yang, J. Liang, J. Cheverie, S. Fidler, and R. Urtasun, "TorontoCity: Seeing the World with a Million Eyes," 2016.
- [138] A. Lehner, S. Gasperini, A. Marcos-Ramiro, M. Schmidt, M. Mahani, N. Navab, B. Busam, and F. Tombari, "3D-VField: Adversarial Augmentation of Point Clouds for Domain Generalization in 3D Object Detection," 2021.
- [139] T. Sun, M. Segu, J. Postels, Y. Wang, L. Gool, B. Schiele, F. Tombari, and F. Yu, "SHIFT: A Synthetic Driving Dataset for Continuous Multi-Task Domain Adaptation," 2022.
- [140] G. Ros, L. Sellart, J. Materzynska, D. Vázquez, and A. López, "The SYNTHIA Dataset: A Large Collection of Synthetic Images for Semantic Segmentation of Urban Scenes," 2016.
- [141] G. Choe, S.-h. Kim, S. Im, J.-Y. Lee, S. Narasimhan, and I. Kweon, "RANUS: RGB and NIR Urban Scene Dataset for Deep Scene Parsing," 2018.
- [142] J. Houston, G. Zuidhof, L. Bergamini, Y. Ye, A. Jain, S. Omari, V. Iglovikov, and P. Ondruska, "One Thousand and One Hours: Self-driving Motion Prediction Dataset," 2020.
- [143] A. Carballo, J. Lambert, A. Cano, D. Wong, P. Narksri, Y. Kitsukawa, E. Takeuchi, S. Kato, and K. Takeda, "LIBRE: The Multiple 3D LiDAR Dataset," 2020.
- [144] R. Izquierdo, Quintanar, I. Parra, D. Llorca, and M. Sotelo, "The PREVENTION dataset: a novel benchmark for PREdiction of VEHICLES iNTentIONS," 2019.
- [145] A. Teichman, J. Levinson, and S. Thrun, "Towards 3D object recognition via classification of arbitrary object tracks," 2011.
- [146] Y. Chen, J. Wang, J. Li, C. Lu, Z. Luo, H. Xue, and C. Wang, "LiDAR-Video Driving Dataset: Learning Driving Policies Effectively," 2018.
- [147] S. Yogamani, C. Hughes, J. Horgan, G. Sistu, P. Varley, D. O'Dea, M. Uříčář, S. Milz, M. Simon, K. Amende, C. Witt, H. Rashed, S. Chennupati, S. Nayak, S. Mansoor, X. Perroton, and P. Pérez, "WoodScape: A Multi-Task, Multi-Camera Fisheye Dataset for Autonomous Driving," 2019.
- [148] F. Tung, J. Chen, L. Meng, and J. Little, "The Raincouver Scene Parsing Benchmark for Self-Driving in Adverse Weather and at Night," 2017.
- [149] X. Liu, Z. Deng, H. Lu, and L.-I. Cao, "Benchmark for road marking detection: Dataset specification and performance baseline," 2017.
- [150] M. Aly, "Real time detection of lane markers in urban streets," 2008.
- [151] J. Jeong, Y. Cho, Y.-s. Shin, H. Roh, and A. Kim, "Complex urban dataset with multi-level sensors from highly diverse urban environments," 2019.
- [152] R. Guzmán, J. Hayet, and R. Klette, "Towards Ubiquitous Autonomous Driving: The CCSAD Dataset," 2015.
- [153] S. Saralajew, L. Ohnemus, L. Ewecker, E. Asan, S. Isele, and S. Roos, "A Dataset for Provident Vehicle Detection at Night," 2021.
- [154] P. Mirowski, A. Banki-Horvath, K. Anderson, D. Teplyashin, K. Hermann, M. Malinowski, M. Grimes, K. Simonyan, K. Kavukcuoglu, A. Zisserman, and R. Hadsell, "The StreetLearn Environment and Dataset," 2019.
- [155] A. Zhu, D. Thakur, T. Özaskan, B. Pfrommer, V. Kumar, and K. Daniilidis, "The Multivehicle Stereo Event Camera Dataset: An Event Camera Dataset for 3D Perception," 2018.
- [156] P. Koschorrek, T. Piccini, P. Oberg, M. Felsberg, L. Nielsen, and R. Mester, "A Multi-sensor Traffic Scene Dataset with Omnidirectional Video," 2013.
- [157] J. Xue, J. Fang, T. Li, B. Zhang, P. Zhang, Z. Ye, and J. Dou, "BLVD: Building A Large-scale 5D Semantics Benchmark for Autonomous Driving," 2019.
- [158] ","
- [159] X. Li, F. Flohr, Y. Yang, H. Xiong, M. Braun, S. Pan, K. Li, and D. Gavrilu, "A new benchmark for vision-based cyclist detection," 2016.
- [160] C. Wojek, S. Walk, and B. Schiele, "Multi-cue onboard pedestrian detection," 2009.
- [161] A. Ess, B. Leibe, K. Schindler, and L. Gool, "A mobile vision system for robust multi-person tracking," 2008.
- [162] K. Cordes, C. Reinders, P. Hindricks, J. Lammers, B. Rosenhahn, and H. Broszio, "RoadSaW: A Large-Scale Dataset for Camera-Based Road Surface and Wetness Estimation," 2022.
- [163] K. Cordes and H. Broszio, "Vehicle Lane Merge Visual Benchmark," 2021.
- [164] F. Flohr and D. Gavrilu, "PedCut: an iterative framework for pedestrian segmentation combining shape models and multiple data cues," 2013.
- [165] N. Schneider and D. Gavrilu, "Pedestrian Path Prediction with Recursive Bayesian Filters: A Comparative Study," 2013.
- [166] C. Keller, M. Enzweiler, and D. Gavrilu, "A new benchmark for stereo-based pedestrian detection," 2011.
- [167] A. Singh, A. Kamireddypalli, V. Gandhi, and K. Krishna, "LiDAR guided Small obstacle Segmentation," 2020.
- [168] T. Ort, I. Gilitschenski, and D. Rus, "GROUNDED: The Localizing Ground Penetrating Radar Evaluation Dataset," 2021.
- [169] R. Krajewski, J. Bock, L. Kloecker, and L. Eckstein, "The highD Dataset: A Drone Dataset of Naturalistic Vehicle Trajectories on German Highways for Validation of Highly Automated Driving Systems," 2018.
- [170] J. Bock, R. Krajewski, T. Moers, S. Runde, L. Vater, and L. Eckstein, "The inD Dataset: A Drone Dataset of Naturalistic Road User Trajectories at German Intersections," 2019.
- [171] R. Krajewski, T. Moers, J. Bock, L. Vater, and L. Eckstein, "The roundD Dataset: A Drone Dataset of Road User Trajectories at Roundabouts in Germany," 2020.
- [172] T. Moers, L. Vater, R. Krajewski, J. Bock, A. Zlocki, and L. Eckstein, "The exiD Dataset: A Real-World Trajectory Dataset of Highly Interactive Highway Scenarios in Germany," 2022.
- [173] A. Robicquet, A. Sadeghian, A. Alahi, and S. Savarese, "Learning Social Etiquette: Human Trajectory Understanding In Crowded Scenes," 2016.
- [174] A. Zyner, S. Worrall, and E. Nebot, "Naturalistic Driver Intention and Path Prediction Using Recurrent Neural Networks," 2018.
- [175] P. Spannaus, P. Zechel, and K. Lenz, "AUTOMATUM DATA: Drone-based highway dataset for the development and validation of automated driving software for research and commercial applications," 2021.
- [176] T. Fleck, K. Daaboul, M. Weber, P. Schörner, M. Wehmer, J. Doll, S. Orf, N. Sußmann, C. Hubschneider, M. Zofka, F. Kuhnt, R. Kohlhaas, I. Baumgart, R. Zöllner, and J. Zöllner, "Towards Large Scale Urban Traffic Reference Data: Smart Infrastructure in the Test Area Autonomous Driving Baden-Württemberg," 2018.
- [177] D.-H. Paek, S. Kong, and K. Wijaya, "K-Radar: 4D Radar Object Detection for Autonomous Driving in Various Weather Conditions," 2022.
- [178] J. Oh, G. Lee, J. Park, W. Oh, J. Heo, H. Chung, D. Kim, B. Park, C.-G. Lee, S. Choi, and S. Oh, "Towards Defensive Autonomous Driving: Collecting and Probing Driving Demonstrations of Mixed Qualities," 2021.
- [179] G. Pandey, J. McBride, and R. Eustice, "Ford Campus vision and lidar data set," 2011.
- [180] N. Carlevaris-Bianco, A. Ushani, and R. Eustice, "University of Michigan North Campus long-term vision and lidar dataset," 2016.
- [181] M.-F. Chang, J. Lambert, P. Sangkloy, J. Singh, S. Bak, A. Hartnett, D. Wang, P. Carr, S. Lucey, D. Ramanan, and J. Hays, "Argoverse: 3D Tracking and Forecasting With Rich Maps," 2019.
- [182] W. Zhou, J. Berrio, C. Alvis, M. Shan, S. Worrall, J. Ward, and E. Nebot, "Developing and Testing Robust Autonomy: The University of Sydney Campus Data Set," 2020.
- [183] S. Qiao, Y. Zhu, H. Adam, A. Yuille, and L.-C. Chen, "ViP-DeepLab: Learning Visual Perception with Depth-aware Video Panoptic Segmentation," 2020.
- [184] —, "ViP-DeepLab: Learning Visual Perception with Depth-aware Video Panoptic Segmentation," 2020.
- [185] E. Alberti, A. Tavera, C. Masone, and B. Caputo, "IDDA: A Large-Scale Multi-Domain Dataset for Autonomous Driving," 2020.
- [186] Z. Yan, L. Sun, T. Krajník, and Y. Ruichek, "EU Long-term Dataset with Multiple Sensors for Autonomous Driving," 2019.
- [187] M. Fabbri, G. Brasó, G. Maugeri, O. Cetintas, R. Gasparini, A. Osep, S. Calderara, L. Leal-Taixé, and R. Cucchiara, "MOTSynth: How Can Synthetic Data Help Pedestrian Detection and Tracking?" 2021.
- [188] B. Wilson, W. Qi, T. Agarwal, J. Lambert, J. Singh, S. Khandelwal, B. Pan, R. Kumar, A. Hartnett, J. Pontes, D. Ramanan, and J. Hays, "Argoverse 2: Next Generation Datasets for Self-Driving Perception and Forecasting," 2023.
- [189] —, "Argoverse 2: Next Generation Datasets for Self-Driving Perception and Forecasting," 2023.
- [190] —, "Argoverse 2: Next Generation Datasets for Self-Driving Perception and Forecasting," 2023.

- [191] —, “Argoverse 2: Next Generation Datasets for Self-Driving Perception and Forecasting,” 2023.
- [192] K. Li, K. Chen, H. Wang, L. Hong, C. Ye, J. Han, Y. Chen, W. Zhang, C. Xu, D.-Y. Yeung, X. Liang, Z. Li, and H. Xu, “CODA: A Real-World Road Corner Case Dataset for Object Detection in Autonomous Driving,” 2022.
- [193] K. Lis, K. Nakka, P. Fua, and M. Salzmann, “Detecting the Unexpected via Image Resynthesis,” 2019.
- [194] J. Han, X. Liang, H. Xu, K. Chen, L. Hong, J. Mao, C. Ye, W. Zhang, Z. Li, X. Liang, and C. Xu, “SODA10M: A Large-Scale 2D Self/Semi-Supervised Object Detection Dataset for Autonomous Driving,” 2021.
- [195] C. Cress, W. Zimmer, L. Strand, V. Lakshminarasimhan, M. Fortkord, S. Dai, and A. Knoll, “A9-Dataset: Multi-Sensor Infrastructure-Based Dataset for Mobility Research,” 2022.
- [196] G. Kim, Y.-S. Park, Y. Cho, J. Jeong, and A. Kim, “MulRan: Multimodal Range Dataset for Urban Place Recognition,” 2020.
- [197] X. Ye, M. Shu, H. Li, Y. Shi, Y. Li, G.-S. Wang, X. Tan, and E. Ding, “Rope3D: The Roadside Perception Dataset for Autonomous Driving and Monocular 3D Object Detection Task,” 2022.
- [198] Y. Pan, F. Xie, and H. Zhao, “Understanding the Challenges When 3D Semantic Segmentation Faces Class Imbalanced and OOD Data,” 2022.
- [199] F. Valverde, J. Hurtado, and A. Valada, “There is More than Meets the Eye: Self-Supervised Multi-Object Detection and Tracking with Sound by Distilling Multimodal Knowledge,” 2021.
- [200] R. Mohan and A. Valada, “Amodal Panoptic Segmentation,” 2022.
- [201] —, “Amodal Panoptic Segmentation,” 2022.
- [202] K. Burnett, D. Yoon, Y. Wu, A. Li, H. Zhang, S. Lu, J. Qian, W.-K. Tseng, A. Lambert, K. Leung, A. Schoellig, and T. Barfoot, “Boreas: A multi-season autonomous driving dataset,” 2022.
- [203] Y. Cui, Z. Cao, Y. Xie, X. Jiang, F. Tao, Y. Chen, L. Li, and D. Liu, “DG-Labeler and DGL-MOTS Dataset: Boost the Autonomous Driving Perception,” 2021.
- [204] X. Zhang, Z. Li, Y.-I. Gong, D. Jin, J. Li, L. Wang, Y. Zhu, and H. Liu, “OpenMPD: An Open Multimodal Perception Dataset for Autonomous Driving,” 2022.
- [205] H. Wang, X. Zhang, J. Li, Z. Li, L. Yang, S. Pan, and Y. Deng, “IPS300+: a Challenging multi-modal data sets for Intersection Perception System,” 2021.
- [206] R. Greer, J. Isa, N. Deo, A. Rangesh, and M. Trivedi, “On Salience-Sensitive Sign Classification in Autonomous Vehicle Path Planning: Experimental Explorations with a Novel Dataset,” 2021.
- [207] L. Gressenbuch, K. Esterle, T. Kessler, and M. Althoff, “MONA: The Munich Motion Dataset of Natural Driving,” 2022.
- [208] K. Maag, R. Chan, S. Uhlemeyer, K. Kowol, and H. Gottschalk, “Two Video Data Sets for Tracking and Retrieval of Out of Distribution Objects,” 2022.
- [209] —, “Two Video Data Sets for Tracking and Retrieval of Out of Distribution Objects,” 2022.
- [210] —, “Two Video Data Sets for Tracking and Retrieval of Out of Distribution Objects,” 2022.
- [211] J. Wiederer, J. Schmidt, U. Kressel, K. Dietmayer, and V. Belagiannis, “A Benchmark for Unsupervised Anomaly Detection in Multi-Agent Trajectories,” 2022.
- [212] A. Shurin, A. Saraev, M. Yona, Y. Gutnik, S. Faber, A. Etzion, and I. Klein, “The Autonomous Platforms Inertial Dataset,” 2022.
- [213] A. Rasouli, I. Kotseruba, T. Kunic, and J. Tsotsos, “PIE: A Large-Scale Dataset and Models for Pedestrian Intention Estimation and Trajectory Prediction,” 2019.
- [214] J. Kim, T. Misu, Y.-T. Chen, A. Tawari, and J. Canny, “Grounding Human-To-Vehicle Advice for Self-Driving Vehicles,” 2019.
- [215] Y. Qiu, C. Busso, T. Misu, and K. Akash, “Incorporating Gaze Behavior Using Joint Embedding With Scene Context for Driver Takeover Detection,” 2022.
- [216] V. Ramanishka, Y.-T. Chen, T. Misu, and K. Saenko, “Toward Driving Scene Understanding: A Dataset for Learning Driver Behavior and Causal Reasoning,” 2018.
- [217] Y. Yao, M. Xu, C. Choi, D. Crandall, E. Atkins, and B. Dariush, “Egocentric Vision-based Future Vehicle Localization for Intelligent Driving Assistance Systems,” 2018.
- [218] A. Narayanan, I. Dwivedi, and B. Dariush, “Dynamic Traffic Scene Classification with Space-Time Coherence,” 2019.
- [219] H. Girase, H. Gang, S. Malla, J. Li, A. Kanehara, K. Mangalam, and C. Choi, “LOKI: Long Term and Key Intentions for Trajectory Prediction,” 2021.
- [220] S. Malla, B. Dariush, and C. Choi, “TITAN: Future Forecast Using Action Priors,” 2020.
- [221] “.”
- [222] M. Bijelic, F. Mannan, T. Gruber, W. Ritter, K. Dietmayer, and F. Heide, “Seeing Through Fog Without Seeing Fog: Deep Sensor Fusion in the Absence of Labeled Training Data,” 2019.
- [223] A. Walia, S. Walz, M. Bijelic, F. Mannan, F. Julca-Aguilar, M. Langer, W. Ritter, and F. Heide, “Gated2Gated: Self-Supervised Depth Estimation from Gated Images,” 2021.
- [224] T. Gruber, F. Julca-Aguilar, M. Bijelic, W. Ritter, K. Dietmayer, and F. Heide, “Gated2Depth: Real-Time Dense Lidar From Gated Images,” 2019.
- [225] M. Wigness, S. Eum, J. Rogers, D. Han, and H. Kwon, “A RUGD Dataset for Autonomous Navigation and Visual Perception in Unstructured Outdoor Environments,” 2019.
- [226] D. Temel, G. Kwon, M. Prabhushankar, and G. Al-Regib, “CURE-TSR: Challenging Unreal and Real Environments for Traffic Sign Recognition,” 2017.
- [227] D. Temel, M.-H. Chen, and G. Al-Regib, “Traffic Sign Detection Under Challenging Conditions: A Deeper Look into Performance Variations and Spectral Characteristics,” 2019.