

**Patents Received**

1. 11433812, "Hitching Maneuver", Sep 06, 2022
2. 11386673, "Brake Light Detection", Jul 12, 2022
3. 11318952, "Feedback for an Autonomous Vehicle", May 03, 2022
4. 11270164, "Vehicle Neural Network", Mar 08, 2022
5. 11220259, "Multi-Sensor Probabilistic Object Detection and Automated Braking", Jan 11, 2022
6. 11216972, "Vehicle Localization Using Cameras", Jan 04, 2022
7. 11200447, "Low- And High-Fidelity Classifiers Applied to Road-Scene Images", Dec 14, 2021
8. 11176823, "Enhanced Vehicle Operation", Nov 16, 2021
9. 11169534, "Vehicle Radar Perception and Localization", Nov 09, 2021
10. 10802478, "Hitch Assist System and Method For Autonomously Maneuvering A Vehicle In A User-Specified Target Travel Direction", Oct 13, 2020
11. 10744943, "System and Method for Trailer Alignment", Aug 18, 2020
12. 10726304, "Refining Synthetic Data with A Generative Adversarial Network Using Auxiliary Inputs", July 28, 2020
13. 10632803, "Hitch assist system", Apr 28, 2020
14. 10614327, "Traffic-Light Detection and Classification Using Computer Vision and Deep Learning", Apr 07, 2020
15. 10545506, "METHODS AND APPARATUS TO PERFORM VISUAL ODOMETRY USING A VEHICLE CAMERA SYSTEM", Jan 28, 2020
16. 10521677, "Virtual Sensor-Data-Generation System and Method Supporting Development of Vision-Based Rain-Detection Algorithms", Dec 31, 2019
17. 10510187, "Method and System for Virtual Sensor Data Generation with Depth Ground Truth Annotation", Dec 17, 2019
18. 10489691, "Fixation Generation for Machine Learning", Nov 26, 2019
19. 10482572, "Fusion Of Motion And Appearance Features For Object Detection And Trajectory Prediction", Nov 19, 2019
20. 10453256, "Lane Boundary Detection Data Generation in Virtual Environment", Oct 22, 2019
21. 10452946, "Object Detection Using Recurrent Neural Network and Concatenated Feature Map", Oct 22, 2019
22. 10430672, "Hitch Assist System With Trailer Height Estimation And Hitch Coupler Identification", Oct 01, 2019
23. 10430968, "Vehicle Localization Using Cameras", Oct 01, 2019
24. 10402667, "Traffic-Light Detection and Classification Using Computer Vision and Deep Learning", Sep 03, 2019
25. 10373019, "Low- And High-Fidelity Classifiers", Aug 06, 2019
26. 10336326, "Lane Detection Systems And Methods", Jul 02, 2019
27. 10315649, "Multi-Sensor Probabilistic Object Detection and Automated Braking", Jun 11, 2019
28. 10318826, "Rear Obstacle Detection and Distance Estimation", Jun 11, 2019
29. 10304335, "Detecting Available Parking Spaces", May 28, 2019
30. 10248874, "Brake Light Detection", Apr 02, 2019
31. 10229363, "Probabilistic Inference Using Weighted-Integrals-And-Sums-By-Hashing For Object Tracking", Mar 12, 2019
32. 10228693, "Generating Simulated Sensor Data For Training And Validation Of Detection Models",
33. 10198655, "Object Detection Using Recurrent Neural Network and Concatenated Feature Map", Feb 05, 2019
34. 10185881, "Traffic-Light Detection and Classification", Jan 22, 2019
35. 10176634, "Lane Boundary Detection Data Generation in Virtual Environment", Jan 08, 2019

**Patent Pending**

1. 84225055, Polygonal Parking Spot Detection, 13-Nov-19
2. 84220220, Augment DNN training with synthetic data, 28-Oct-19
3. 84198218, Dynamically Routed Patch Discriminator, 20-Aug-19
4. 84187400, Seq2Seq VideoGAN, 30-Jul-19
5. 84151610, Diversifying simulated datasets, 15-Apr-19
6. 84126703, Stereo-GAN-verification, 4-Feb-19
7. 84103632, AutoHitch Coupler Tracking Jump, 27-Nov-18
8. 84101573, Generative Approach for quantifying photorealism, 19-Nov-18
9. 84073563, AutoHitch Point Tracking, 27-Aug-18
10. 218-0978, Home Hitch, 24-Jul-18
11. 84043639, Determination of misalignment in the end phase of an autonomous hitching maneuver, 25-May-18
12. 84014982, Trailer angle detection using end-to-end learning, 12-Mar-18
13. 84010683, Automated Pipeline to Evaluate Autonomous Vehicle Algorithms on Simulated Data, 2-Mar-18
14. 83942014, AutoHitch Trailer Target Transition, 20-Dec-17
15. 83875275, Deep Action-Conditioned Vehicle Control, 14-Aug-17
16. 83875247, Video Prediction Based Vehicle Control, 14-Aug-17

17. 83867394, Vehicle Odometry using backup camera, 31-Jul-17
18. 83816657, Deep Motion and Appearance Fusion, 11-Apr-17
19. 83814837, Shared Deep Network Processing, 7-Apr-17
20. 83803208, Pausing during AutoHitch, 14-Mar-17
21. 83797389, Semantic GAN Image Refinement, 1-Mar-17
22. 83785863, Trailer feature clustering, 6-Feb-17
23. 83740678, Localization for Autonomous Vehicle using Vector Maps and Cameras, 1-Sep-16
24. 83721861, Recurrent Network for Sensor Fusion Object Detection, 26-Aug-16
25. 83717786, A Vision Based System for Detecting Vehicles at Night, 16-Aug-16
26. 83717374, Autonomous Vehicle Feedback, 15-Aug-16
27. 83717272, Recurrent Neural Network for Detection, 15-Aug-16
28. 83716076, Simulation for Sensor Fusion using Tracking and Probability, 11-Aug-16
29. 83712465, Data generation for traffic light detection algorithm development, 3-Aug-16
30. 83707440, Brake Light Detection Using Deep Learning, 21-Jul-16
31. 83706951, Traffic Light Detection and Classification, 20-Jul-16
32. 83703968, Application of Bayesian probabilistic approach to reverse braking scenarios, 13-Jul-16
33. 83680889, Deep Learning based Front-Facing Camera Lane Detection, 12-May-16
34. 83677353, Single camera rear obstacle detection and distance estimation for vehicle intelligence, 5-May-16
35. 83677086, Single camera front object distance estimation for vehicle intelligence, 4-May-16
36. 83657569, Virtual data for deep radar space detection, 14-Mar-16
37. 83649350, Data generation for rain detection algorithm development, 25-Feb-16
38. 215-3470, Deep radar space detection, 12-Nov-15
39. 215-3410, Virtual camera data generation with depth ground truth, 10-Nov-15
40. 215-3390, Lane position estimation with side camera using deep learning, 16-Oct-15
41. 215-3401, Rear Camera Pedestrian Detection, 21-Sep-15
42. 215-3139, Fixation Generation for Deep Learning, 26-Aug-15
43. 215-3117, Hierarchical deep neural networks, 25-Aug-15
44. 215-3138, Pedestrian Detection with Saliency Maps, 25-Aug-15
45. 83586052, Customer-specific robust driver identification algorithm, 25-Aug-15
46. 215-3469, Vision-based rain detection using deep learning, 22-Jun-15
47. 215-1793, Virtual lane detection testbed, 22-Jun-15
48. 215-1792, Lane detection data generation in virtual environments, 22-Jun-15
49. 215-1794, Probabilistic inference using Weighted-Integrals-And-Sums-By-Hashing, 9-Jun-15
50. 215-1690, Improved radar perception, 1-Jun-15
51. 215-0467, Virtual autonomous response testbed, 16-Jan-15
52. 215-0465, Virtual sensor testbed, 14-Jan-15
53. 215-0466, Sensor data generation in virtual environments, 14-Jan-15