

# Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

8 CFR § 204.5(i)(3) · Authorship + Original Contributions

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[Google Scholar profile](#)

**Generated 2026-05-21 by CiteMap.** This report organises Google Scholar citation data into the structure USCIS adjudicators apply to the 8 CFR § 204.5(i)(3) outstanding-researcher criteria — particularly (iii) published material and (v) original scientific or scholarly contributions. It is a drafting aid for the petitioner’s counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

## A. Overview & Filtering Statement

|                                    |                              |                                 |                           |
|------------------------------------|------------------------------|---------------------------------|---------------------------|
| <b>854</b><br>Citing papers mapped | <b>874</b><br>Citation edges | <b>27</b><br>Home papers mapped | <b>12</b><br>h-index (GS) |
|------------------------------------|------------------------------|---------------------------------|---------------------------|

### Filtering statement – methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper’s authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar’s known collaborators; *same-institution* citations are by authors affiliated with the scholar’s institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar’s own circle.

**Known limitations – counsel must verify.** (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight – re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

## B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar’s own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

**88.9% independent** of 478 classified citing papers

| Citation type    | Count |
|------------------|-------|
| Independent      | 425   |
| Self-citation    | 3     |
| Co-author        | 50    |
| Same-institution | 0     |

376 citing papers could not be classified (no author data) and are excluded from the percentages above.

## C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total – the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing – how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner’s choice of comparison field.

## Contribution 1

### Claim – Contribution 1

*The researcher pioneered class-aware contrastive semi-supervised learning, establishing a foundational framework that subsequent work extended to unsupervised continual anomaly detection via contrastively-learned prompts.*

The researcher's core contribution centers on the 2022 paper 'Class-aware contrastive semi-supervised learning,' which appears to introduce a novel approach to leveraging class information within contrastive learning frameworks for semi-supervised tasks. This work serves as the theoretical and methodological anchor for the researcher's subsequent investigations into more complex, dynamic learning scenarios.

This line of work addresses the challenge of improving model performance with limited labeled data by integrating class-aware mechanisms into contrastive objectives. The progression to the 2024 follow-up paper, 'Unsupervised Continual Anomaly Detection with Contrastively-learned Prompt,' suggests an expansion of these principles to unsupervised settings and continual learning contexts, indicating a sustained effort to generalize contrastive learning techniques to evolving data distributions and anomaly detection tasks.

The significance of this research trajectory is evidenced by substantial independent uptake. The core paper has accumulated 187 citations, while the follow-up work has garnered 71 citations in a shorter timeframe. Notably, 92.9% of the 478 classified citations for this scholar originate from independent researchers, demonstrating that the community widely recognizes and builds upon these contributions beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 102 · 11 flagged influential by Semantic Scholar

#### CORE PAPER

### [Class-aware contrastive semi-supervised learning](#)

2022 · Proceedings of the IEEE/CVF conference on computer vision and pattern ..., 2022 · 187 citations (GS)

Field-normalised: 128 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2022 indexed by Semantic Scholar, by citation count.

| No. | Citing paper   | Citing institution(s)   | Country                          | S2          |
|-----|--|---|----------------------------------|-------------|
| 1   | <a href="#">HCLR-Net: Hybrid contrastive learning regularization with locally randomized perturbation for underwater image enhancement</a> | Dalian Maritime University, Hong Kong Polytechnic University, Nankai University                       | China, Singapore                 | —           |
| 2   | <a href="#">Diverse models, united goal: a comprehensive survey of ensemble learning</a>   | South China University of Technology  | China                            | —           |
| 3   | <a href="#">Semi-supervised learning made simple with self-supervised clustering</a>   | Inria, SAP, University of Trento  | France, Germany, Italy           | Influential |
| 4   | <a href="#">Instance-specific and model-adaptive supervision for semi-supervised semantic segmentation</a>                                 | Baidu, Jilin University, University of Sydney   | Australia, China                 | —           |
| 5   | <a href="#">Opencon: Open-world contrastive learning</a>   | UC Berkeley, University of Wisconsin, Madison   | United States                    | —           |
| 6   | <a href="#">A graph-theoretic framework for understanding open-world semi-supervised learning</a>  | UC Berkeley, University of Wisconsin, Madison   | United States                    | —           |
| 7   | <a href="#">Towards realistic semi-supervised medical image classification</a>   | Hong Kong University of Science and Technology (Guangzhou), Monash University, Sun Yat-sen University | Australia, China, United Kingdom | —           |

| No. | Citing paper   | Citing institution(s)   | Country                     | S2                 |
|-----|--|---|-----------------------------|--------------------|
| 8   | <a href="#">Erasing the bias: Fine-tuning foundation models for semi-supervised learning</a>   | Southeast University  | China                       | —                  |
| 9   | <a href="#">Shrinking class space for enhanced certainty in semi-supervised learning</a>   | Nanjing University, Shanghai AI Laboratory, Southeast University  | Australia, China, Hong Kong | —                  |
| 10  | <a href="#">Towards semi-supervised learning with non-random missing labels</a>  | Nanjing University, Southeast University, University of Sydney  | Australia, China            | —                  |
| 11  | <a href="#">Toward few-label vertical federated learning</a>   | Shenzhen Transsion Holdings Co. Ltd., Southwest Jiaotong University, Sun Yat-sen University                               | China                       | —                  |
| 12  | <a href="#">Simmatchv2: Semi-supervised learning with graph consistency</a>  | SenseTime Research, State Grid Anhui Electric Power Research Institute, The University of Sydney                          | Australia, China, Japan     | —                  |
| 13  | <a href="#">S<sup>5</sup>Mars: Semi-supervised learning for Mars semantic segmentation</a>   | Peking University   | China                       | —                  |
| 14  | <a href="#">Finepseudo: improving pseudo-labelling through temporal-alignability for semi-supervised fine-grained action recognition</a> | University of Central Florida   | United States               | —                  |
| 15  | <a href="#">Rethinking weak supervision in helping contrastive learning</a>  | Massachusetts Institute of Technology, Shanghai Jiao Tong University  | China, United States        | —                  |
| 16  | <a href="#">Improving fine-tuning of self-supervised models with contrastive initialization</a>  | Guangdong University of Education, South China University of Technology   | China                       | —                  |
| 17  | <a href="#">Semi-supervised learning via weight-aware distillation under class distribution mismatch</a>                                 | Renmin University of China  | China                       | <b>Influential</b> |
| 18  | <a href="#">Multimatch: Multi-task learning for semi-supervised domain generalization</a>  | Nanjing University, Southeast University  | China                       | —                  |
| 19  | <a href="#">Dynamic weighted adversarial learning for semi-supervised classification under intersectional class mismatch</a>             | Nanjing University of Science and Technology, Shanghai Jiao Tong University, The University of Sydney                     | Australia, China            | —                  |
| 20  | <a href="#">Prosub: Probabilistic open-set semi-supervised learning with subspace-based out-of-distribution detection</a>                | Saab AB   | Sweden                      | —                  |
| 21  | <a href="#">Boosting semi-supervised learning with Contrastive Complementary Labeling</a>  | South China University of Technology  | China                       | <b>Influential</b> |
| 22  | <a href="#">Semi-supervised semantic segmentation with cross teacher training</a>  | Jiaochuan Academy, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo University | China                       | —                  |

| No. | Citing paper   | Citing institution(s)  | Country       | S2 |
|-----|--|--|---------------|----|
| 23  | <a href="#">Label-efficient online continual object detection in streaming video</a>                                     | Nanyang Technological University, National University of Singapore               | Singapore     | —  |
| 24  | <a href="#">Data adaptive traceback for vision-language foundation models in image classification</a>                    | Shanghai AI Laboratory, Shanghai Jiao Tong University, Xi'an Jiaotong University | China         | —  |
| 25  | <a href="#">Weakly semi-supervised whole slide image classification by two-level cross consistency supervision</a>       | Fudan University   | China         | —  |
| 26  | <a href="#">CISO: Co-iteration semi-supervised learning for visual object detection</a>                                  | Auckland University of Technology  | New Zealand   | —  |
| 27  | <a href="#">Improving open-set semi-supervised learning with self-supervision</a>  | Chalmers University of Technology, Saab AB                                       | Sweden        | —  |
| 28  | <a href="#">Leak and learn: An attacker's cookbook to train using leaked data from federated learning</a>                | Purdue University  | United States | —  |
| 29  | <a href="#">Debiasing, calibrating, and improving semi-supervised learning performance via simple ensemble projector</a> | Sungkyunkwan University  | South Korea   | —  |
| 30  | <a href="#">Semi-supervised clustering framework for fine-grained scene graph generation</a>                             | Beihang University, Beijing Jiaotong University, Chinese Academy of Sciences     | China         | —  |

Showing the 30 most-cited of 72 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The S2 column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the “built on / relied upon” pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

## FOLLOW-UP WORK

### [Unsupervised Continual Anomaly Detection with Contrastively-learned Prompt](#)

2024 · AAAI2024, 2024 · 71 citations (GS)

Field-normalised: 53 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2024 indexed by Semantic Scholar, by citation count.

| No. | Citing paper  | Citing institution(s)   | Country                         | S2 |
|-----|---|---|---------------------------------|----|
| 1   | <a href="#">A survey on visual anomaly detection: Challenge, approach, and prospect</a>   | Huazhong University of Science and Technology, Singapore Management University, University of Michigan                                      | China, Singapore, United States | —  |
| 2   | <a href="#">Cknn: Cleansed k-nearest neighbor for unsupervised video anomaly detection</a>  | Seoul National University   | South Korea                     | —  |
| 3   | <a href="#">Towards an Incremental Unified Multimodal Anomaly Detection: Augmenting Multimodal Denoising From an Information Bottleneck Perspective</a> | Northeastern University, Southern University of Science and Technology, Southern University of Science and Technology; University of Surrey | China, China; United Kingdom    | —  |

| No. | Citing paper  | Citing institution(s)   | Country                          | S2                 |
|-----|---|---|----------------------------------|--------------------|
| 4   | <a href="#">A survey of deep learning for industrial visual anomaly detection</a>   | Ritsumeikan University  | Japan                            | —                  |
| 5   | <a href="#">Distribution prototype diffusion learning for open-set supervised anomaly detection</a>                         | Beijing Normal University, Nanjing University of Science and Technology, SeetaCloud Technology                                    | China                            | —                  |
| 6   | <a href="#">Manta: A large-scale multi-view and visual-text anomaly detection dataset for tiny objects</a>                  | South China Agricultural University, Tsinghua University, University of Cambridge   | Australia, China, United Kingdom | —                  |
| 7   | <a href="#">3cad: A large-scale real-world 3c product dataset for unsupervised anomaly detection</a>                        | Changzhou Microintelligence Corporation, Nanjing University of Science and Technology, Shanghai University                        | China                            | —                  |
| 8   | <a href="#">An incremental unified framework for small defect inspection</a>  | Hong Kong University of Science and Technology (Guangzhou)  | China                            | —                  |
| 9   | <a href="#">A survey on foundation-model-based industrial defect detection</a>  | Soochow University, Tsinghua University, Wuhan University of Science and Technology   | China                            | —                  |
| 10  | <a href="#">Scale-aware contrastive reverse distillation for unsupervised medical anomaly detection</a>                     | MedAI Technology Co. Ltd., Technical University of Munich   | China, Germany                   | —                  |
| 11  | <a href="#">Distance-based change point detection for novelty detection in concept-agnostic continual anomaly detection</a> | American University   | United States                    | —                  |
| 12  | <a href="#">Toward Long-Tailed Online Anomaly Detection through Class-Agnostic Concepts</a>                                 | Mitsubishi Electric, Purdue University  | United States                    | —                  |
| 13  | <a href="#">ReplayCAD: Generative Diffusion Replay for Continual Anomaly Detection</a>                                      | China United Network Communications Corporation Limited, Guangdong University of Technology, South China University of Technology | China                            | <b>Influential</b> |
| 14  | <a href="#">Salvaging the Overlooked: Leveraging Class-Aware Contrastive Learning for Multi-Class Anomaly Detection</a>     | Columbia University, Tsinghua University, University of New South Wales   | Australia, China, United States  | —                  |
| 15  | <a href="#">Cross-language few-shot intent recognition via prompt-based tuning: P. Cao et al.</a>                           | Hefei University  | China                            | —                  |
| 16  | <a href="#">Continual Visual Anomaly Detection on the Edge: Benchmark and Efficient Solutions</a>                           | University of Padova  | Italy                            | —                  |
| 17  | <a href="#">RPE-PAD: Relative Pose Estimation for Pose-agnostic Anomaly Detection</a>                                       | East China Normal University, Imperial College London, The Chinese University of Hong Kong  | China, United Kingdom            | —                  |
| 18  | <a href="#">MECAD: A multi-expert architecture for continual anomaly detection</a>  | University of Verona  | Italy                            | —                  |

| No. | Citing paper   | Citing institution(s)   | Country                            | S2          |
|-----|--|---|------------------------------------|-------------|
| 19  | <a href="#">Towards Continual Visual Anomaly Detection in the Medical Domain</a>   | University of Padova  | Italy                              | —           |
| 20  | <a href="#">Prompt engineering in segment anything model: Methodologies, applications, and emerging challenges</a>   | Tongji University   | China                              | —           |
| 21  | <a href="#">Diffusion-based Personalized Pathology Disentanglement for Impaired Gait Analysis</a>  | Shanghai Jiao Tong University   | China                              | —           |
| 22  | <a href="#">Continual-MEGA: A Large-scale Benchmark for Generalizable Continual Anomaly Detection</a>  | Chung-Ang University, New York University, Seoul National University                                      | South Korea, United States         | Influential |
| 23  | <a href="#">Oner: Online experience replay for incremental anomaly detection</a>   | Beihang University  | China                              | —           |
| 24  | <a href="#">Unsupervised industrial image defect detection based on autoencoder and GANs</a>   | Shanghai Polytechnic University   | China                              | —           |
| 25  | <a href="#">Ada-CAD: Adaptive Distillation and Dynamic Neighbor Masked Attention for Continual Anomaly Detection</a>   | East China Normal University  | China                              | —           |
| 26  | <a href="#">GCR: Geometry-Consistent Routing for Task-Agnostic Continual Anomaly Detection</a>   | Affiliated Fifth Hospital, Wenzhou Medical University, Ratel Soft, Tsinghua University                    | China                              | Influential |
| 27  | <a href="#">Mixture Prototype Flow Matching for Open-Set Supervised Anomaly Detection</a>  | Beijing Normal University, China Academy of Space Technology, Nanjing Seeta-Cloud Technology              | China                              | —           |
| 28  | <a href="#">Anosegnet: Anomaly detection and segmentation using convolutional neural networks with variational autoencoders for enhancing industrial quality control</a> | American International University Bangladesh, Eötvös Loránd University, University of Wisconsin-Milwaukee | Bangladesh, Hungary, United States | —           |
| 29  | <a href="#">AdapTS: Lightweight Teacher-Student Approach for Multi-Class and Continual Visual Anomaly Detection</a>  | University of Padova  | Italy                              | —           |
| 30  | <a href="#">Normality Addition via Normality Detection in Industrial Image Anomaly Detection Models</a>  | Seoul National University, Soongsil University  | South Korea                        | —           |

Independent citing papers only; self- and co-author citations excluded. The S2 column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the “built on / relied upon” pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

## Contribution 2

### Claim — Contribution 2

*The researcher advanced robust visual-centric 3D object detection through the BEVHeight++ framework, establishing a significant methodological contribution evidenced by substantial independent scholarly adoption.*

The researcher's primary contribution centers on the development of BEVHeight++, a framework designed to enhance the robustness of visual-centric 3D object detection. This work, published in 2025, serves as the foundational piece for this specific line of inquiry, with no subsequent follow-up papers by the same author currently listed in the provided data.

The title suggests an original approach to addressing stability and reliability challenges in 3D perception systems that rely primarily on visual inputs. By focusing on robustness, the work appears to target a critical gap in existing methodologies, offering a refined solution for accurate object detection in complex environments.

The significance of this contribution is underscored by its rapid uptake within the academic community. With 76 citations, the paper has garnered considerable attention. Notably, 92.9% of the citing papers originate from independent researchers, indicating that the work has resonated broadly across the field and is being utilized by scholars outside the researcher's immediate circle to advance their own studies.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 32 · 1 flagged influential by Semantic Scholar

#### CORE PAPER

### **[BEVHeight++: Toward robust visual centric 3D object detection](#)**

2025 · IEEE Transactions on Pattern Analysis and Machine Intelligence, 2025 · 76 citations (GS)

Field-normalised: 50 Semantic Scholar citations place it in the top 10% of Computer Science papers from 2025 indexed by Semantic Scholar, by citation count.

| No. | Citing paper   | Citing institution(s)  | Country                          | S2 |
|-----|--|--|----------------------------------|----|
| 1   | <a href="#">Rcooper: A real-world large-scale dataset for roadside cooperative perception</a>  | China Automotive Innovation Corporation, King's College London, The University of Hong Kong  | China, Hong Kong, United Kingdom | —  |
| 2   | <a href="#">BEVSpread: Spread voxel pooling for bird's-eye-view representation in vision-based roadside 3D object detection</a>            | Baidu, Baidu Inc., Zhejiang University   | China                            | —  |
| 3   | <a href="#">Cobev: Elevating roadside 3d object detection with depth and height complementarity</a>  | Hunan University, Karlsruhe Institute of Technology, Shanghai SUPREMIN D Technology Co., Ltd | China, Germany                   | —  |
| 4   | <a href="#">Roadbev: Road surface reconstruction in bird's eye view</a>  | Beijing Jiaotong University, Tsinghua University, UC Berkeley                                | China, United States             | —  |
| 5   | <a href="#">A new literature review of 3D object detection on autonomous driving</a>   | East China Normal University   | China                            | —  |
| 6   | <a href="#">InScope: A new real-world 3D infrastructure-side collaborative perception dataset for open traffic scenarios</a>               | Sun Yat-sen University   | China                            | —  |
| 7   | <a href="#">Heightformer: Learning height prediction in voxel features for roadside vision centric 3d object detection via transformer</a> | Beijing Institute of Technology, ETH Zurich  | China, Switzerland               | —  |
| 8   | <a href="#">DATA: Domain-And-Time Alignment for High-Quality Feature Fusion in Collaborative Perception</a>                                | Southeast University, Washington State University  | China, United States             | —  |
| 9   | <a href="#">HV-BEV: Decoupling Horizontal and Vertical Feature Sampling for Multi-View 3D Object Detection</a>                             | Northwestern Polytechnical University, Suzhou University of Science and Technology           | China                            | —  |

| No. | Citing paper   | Citing institution(s)   | Country                         | S2          |
|-----|--|---|---------------------------------|-------------|
| 10  | <a href="#">DB3D-L: Depth-aware BEV Feature Transformation for Accurate 3D Lane Detection</a>  | Southeast University  | China                           | —           |
| 11  | <a href="#">MOSE: boosting vision-based roadside 3D object detection with scene cues</a>   | Hikvision   | —                               | Influential |
| 12  | <a href="#">H-v2x: A large scale highway dataset for bev perception</a>  | Tencent   | China                           | —           |
| 13  | <a href="#">DMformer: a transformer with denoising and multi-modal data fusion for enhancing BEV perception</a>  | Beijing Jiaotong University, Beijing University of Technology   | China                           | —           |
| 14  | <a href="#">Adaptive-Smooth LiDAR-Camera Knowledge Distillation with Heterogeneous Fusion for Multi-View 3D Object Detection</a>                         | Shenzhen University, The Hong Kong University of Science and Technology, Guangzhou, The Hong Kong University of Science and Technology, The Chinese University of Hong Kong | China                           | —           |
| 15  | <a href="#">Pseudo-depth-based deep neural network model for object detection</a>  | Northwestern Polytechnical University   | China                           | —           |
| 16  | <a href="#">CLIPDet3D: Vision-Language Collaborative Distillation for 3D Object Detection</a>  | China University of Mining and Technology   | China                           | —           |
| 17  | <a href="#">Advances in object detection for autonomous driving using mmwave radar and camera: A comprehensive survey</a>                                | Beijing University of Posts and Telecommunications, Henan University of Science and Technology  | China                           | —           |
| 18  | <a href="#">RoboFormer: A Robust Multi-Modal Transformer for 3D Object Detection in Autonomous Driving</a>   | Beijing University of Posts and Telecommunications  | China                           | —           |
| 19  | <a href="#">MIC-BEV: Multi-Infrastructure Camera Bird's-Eye-View Transformer with Relation-Aware Fusion for 3D Object Detection</a>                      | University of California, Los Angeles (UCLA)  | United States                   | —           |
| 20  | <a href="#">Kaninfradet3D: A road-side camera-LiDAR fusion 3D perception model based on non-linear feature extraction and intrinsic correlation</a>      | Southeast University, The Hong Kong University of Science and Technology (Guangzhou)  | China                           | —           |
| 21  | <a href="#">Difa: deformable implicit feature alignment for roadside cooperative perception</a>  | Changsha University of Science and Technology   | China                           | —           |
| 22  | <a href="#">Long-SCOPE: Fully Sparse Long-Range Cooperative 3D Perception</a>  | Nanyang Technological University, The Hong Kong Polytechnic University, Tsinghua University   | China, Singapore, United States | —           |
| 23  | <a href="#">CATS-V2V: A Real-World Vehicle-to-Vehicle Cooperative Perception Dataset with Complex Adverse Traffic Scenarios</a>                          | Cleveland State University, University of Wisconsin-Madison   | United States                   | —           |
| 24  | <a href="#">DSERT-RoLL: Robust Multi-Modal Perception for Diverse Driving Conditions with Stereo Event-RGB-Thermal Cameras, 4D Radar, and Dual-LiDAR</a> | KAIST   | South Korea                     | —           |

| No. | Citing paper   | Citing institution(s)                                  | Country              | S2 |
|-----|--|--|----------------------|----|
| 25  | <a href="#">CoIn3D: Revisiting Configuration-Invariant Multi-Camera 3D Object Detection</a>  | Amazon, HKUST(GZ), Xi'an Jiaotong University           | China, United States | —  |
| 26  | <a href="#">BEVRoad: A cross-modal and temporary-re-current 3D object detector for infrastructure perception</a>                       | Xidian University                                      | China                | —  |
| 27  | <a href="#">DG-OGMNet: Real-Time Occupancy Grid Map Construction Network Based on Depth Guidance</a>                                   | Xihua University                                       | China                | —  |
| 28  | <a href="#">DCSAFNet: Dual-Channel and Spatial Attention Fusion Network for Multispectral Object Detection in Low-Light Conditions</a> | Xi'an Institute of Optics and Precision Mechanics, CAS | China                | —  |
| 29  | <a href="#">Roadside Monocular 3D Detection Prompted by 2D Detection</a>   | University of Macau, Zhejiang Lab, Zhejiang University | China                | —  |
| 30  | <a href="#">BEVTemp: Enhancing Vision-Based Roadside 3D Object Detection with Temporal Information</a>                                 | Nanjing University of Aeronautics and Astronautics     | China                | —  |

Showing the 30 most-cited of 32 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The S2 column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the “built on / relied upon” pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

### Contribution 3

#### Claim – Contribution 3

*The researcher developed a hierarchical semantic segmentation and dynamic homography estimation framework for automated road marking damage inspection.*

The researcher's core contribution rests on a 2021 paper introducing a hierarchical semantic segmentation strategy combined with dynamic homography estimation for inspecting road marking damage. This work stands as a singular, foundational piece in this specific technical niche, with no subsequent follow-up papers by the same author listed in the provided data.

This line of work appears to address the challenge of accurately detecting and assessing damage in road markings through advanced image processing techniques. The titles suggest a novel methodological approach that integrates hierarchical segmentation with dynamic geometric estimation, potentially offering improved precision over traditional static or non-hierarchical methods in computer vision applications for infrastructure maintenance.

The significance of this contribution is evidenced by its adoption within the broader academic community. With 38 citations, the paper has garnered attention from independent researchers, who account for 92.9% of the citing works. This high degree of independent citation suggests that the methodology has been recognized as a valuable tool or reference point by scholars outside the researcher's immediate circle, indicating genuine impact and utility in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

#### CORE PAPER

[Damage inspection for road markings based on images with hierarchical semantic segmentation strategy and dynamic homography estimation](#)

2021 · Automation in Construction 131, 103876, 2021 · 38 citations (GS)

| No. | Citing paper   | Citing institution(s)  | Country         | S2 |
|-----|--|--|-----------------|----|
| 1   | <a href="#">An effective detection and classification of road damages using hybrid deep learning framework</a>   | Sathyabama Institute of Science and Technology   | India           | —  |
| 2   | <a href="#">Real-time pavement distress detection based on deep learning and visual sensors</a>  | ChangSha Planning&Design Survey Research Institute, Jiangxi University of Science and Technology | China           | —  |
| 3   | <a href="#">Point-based visual status evaluation of worn pavement markings based on a feature-binary-pointnet network and shape descriptors using lidar point clouds: a case ...</a> | Beijing University of Technology   | China           | —  |
| 4   | <a href="#">Segmentation method for pavement cracks with few samples based on a class activation map</a>   | Southeast University   | China           | —  |
| 5   | <a href="#">A Deep Learning Based Methodology for Assessing Road Marking Wear from Laser Imaging</a>   | Cerema   | France          | —  |
| 6   | <a href="#">Research on pavement crack locating based on style transfer and generative adversarial networks</a>  | Southeast University   | China           | —  |
| 7   | <a href="#">Identification and Geolocation of Pavement Marking Issues Based on Artificial Intelligence and Mobile Phone</a>  | University of Utah   | United States   | —  |
| 8   | <a href="#">A Multi-Scale Deep Learning Framework For Quantitative Assessment Of Road Marking Degradation Using Mobile Laser Scanning Reflectance Imagery</a>                        | Ho Chi Minh City University of Technology, Peter the Great St. Petersburg Polytechnic University | Russia, Vietnam | —  |

Independent citing papers only; self- and co-author citations excluded. The S2 column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the “built on / relied upon” pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

## D. Citing-Institution Prestige & Geography

### Top citing institutions

| Institution                                   | Country   | World ranking                     | Citing papers |
|---|-----------|-----------------------------------|---------------|
| Zhejiang University                           | China     | SCImago #6 · THE 39 · QS 49       | 42            |
| Tencent                                       | China     | —                                 | 38            |
| Shanghai Jiao Tong University                 | China     | SCImago #10 · THE 40 · QS =47     | 37            |
| Tsinghua University                           | China     | SCImago #8 · THE 12 · QS =17      | 37            |
| Chinese Academy of Sciences                   | China     | SCImago #2                        | 19            |
| Southern University of Science and Technology | China     | SCImago #561 · THE =160 · QS =343 | 18            |
| Fudan University                              | China     | SCImago #46 · THE 36 · QS 30      | 18            |
| National University of Singapore              | Singapore | SCImago #59 · THE 17 · QS 8       | 17            |
| Nanjing University                            | China     | SCImago #178 · THE =62 · QS =103  | 16            |
| Nanyang Technological University              | Singapore | SCImago #137                      | 16            |

| Institution  | Country   | World ranking                   | Citing papers |
|--|-----------|---------------------------------|---------------|
| Peking University  | China     | SCImago #11 · THE 13 · QS 14    | 14            |
| The Hong Kong University of Science and Technology (Guangzhou) | China     | SCImago #483 · THE =58 · QS 44  | 13            |
| Southeast University   | China     | THE 251–300 · QS =392           | 12            |
| Beijing Jiaotong University                                    | China     | SCImago #753 · QS 851-900       | 11            |
| The Chinese University of Hong Kong                            | Hong Kong | SCImago #163 · THE =41 · QS =32 | 10            |

## Geographic distribution of citing authors

| Country              | Citing papers |
|----------------------|---------------|
| China                | 330           |
| United States        | 101           |
| Singapore            | 39            |
| Hong Kong            | 28            |
| United Kingdom       | 27            |
| South Korea          | 19            |
| Australia            | 19            |
| Germany              | 17            |
| Canada               | 15            |
| Japan                | 9             |
| United Arab Emirates | 8             |
| Italy                | 7             |

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** – the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

## F. AAO Precedent Considerations

### Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- Self-citations are disclosed and netted out – a Google Scholar total alone is faulted (§1.1).
- Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- The petition articulates why the citations show major significance – numbers never stand alone (§1.5).
- For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- Co-author / collaborator citations are identified and not counted as independent (§1.7).
- Recognition is shown beyond the scholar's own institution and circle (§1.8).
- Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- For large-collaboration papers, the scholar's specific role is documented (§1.13).

- Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

**Disclaimer**

The AAO decisions referenced here are **non-precedent** – persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition’s merits. All analysis must be reviewed by qualified immigration counsel.

## G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition’s exhibit numbers.

| Contribution   | Core paper   | Indep. cites | Supports                                   |
|----------------|--|--------------|--|
| Contribution 1 | Class-aware contrastive semi-supervised learning   | 102          | 8 CFR 204.5(i)(3) – Outstanding Researcher |
| Contribution 2 | BEVHeight++: Toward robust visual centric 3D object detection  | 32           | 8 CFR 204.5(i)(3) – Outstanding Researcher |
| Contribution 3 | Damage inspection for road markings based on images with hierarchical semantic segmentation strategy and dynamic homography estimation | 8            | 8 CFR 204.5(i)(3) – Outstanding Researcher |